

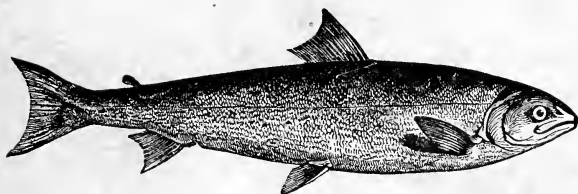
Natural History for Little Folks

YOUNG FOLKS'

Pictures and Stories of Animals

For Home and School

BY MRS. SANBORN TENNEY



FISHES AND REPTILES

WITH ONE HUNDRED AND NINE WOOD ENGRAVINGS

BOSTON

LEE AND SHEPARD, PUBLISHERS

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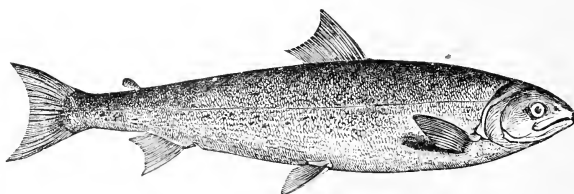
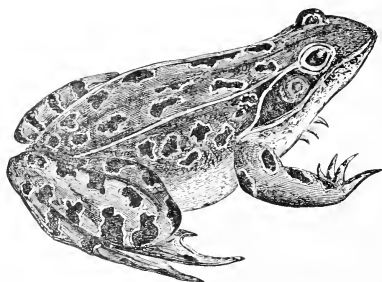
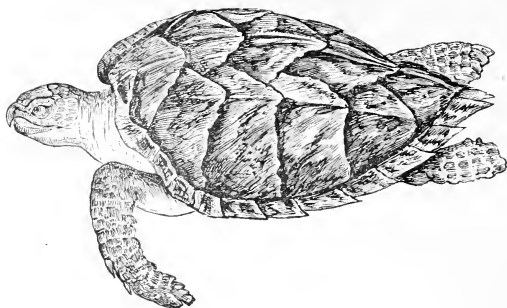
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THE HAWK-BILL TURTLE. THE LEOPARD FROG. THE SALMON.

YOUNG FOLKS'
PICTURES AND STORIES OF ANIMALS

FOR HOME AND SCHOOL

BY

MRS. SANBORN TENNEY

FISHES AND REPTILES.

WITH ONE HUNDRED AND NINE WOOD ENGRAVINGS



BOSTON
LEE AND SHEPARD, PUBLISHERS
1892

YOUNG FOLKS'
PICTURES AND STORIES OF ANIMALS
FOR HOME AND SCHOOL

BY MRS. SANBORN TENNEY

In Six Volumes. Containing 500 Wood Engravings
Each Volume complete in itself

QUADRUPEDS

BIRDS

FISHES AND REPTILES

BEEES, BUTTERFLIES, AND OTHER INSECTS

SEA SHELLS AND RIVER SHELLS

SEA-URCHINS, STAR-FISHES, AND CORALS

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BY ABBY A. TENNEY.

Fishes and Reptiles.



P R E F A C E .



BELIEVING that there is nothing in which children are naturally more interested than they are in animals, and that there are no other objects which can be used to greater advantage than these in their instruction, the writer has prepared these Pictures and Stories of Animals for the Little Ones, to instruct as well as to interest and amuse them.

There are six books in the series, each one complete in itself; and they are so arranged that together they make a Juvenile Library of the Natural History of Animals.

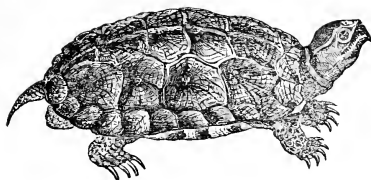
The first book contains pictures and stories of Mammals or Quadrupeds; the second book, pictures and stories of Birds; the third, of Reptiles and Fishes; the fourth, of Bees, Butterflies, and other

Insects, and of Crustaceans and Worms ; the fifth, of Shells, and the animals which live in them ; and the sixth, of Sea-Cucumbers, Sea-Urchins, Star-Fishes, Jelly-Fishes, Sea-Anemones, and Corals.

The wood engravings in the six books are more than five hundred in number, and are true to nature. Several of them were drawn and engraved expressly for this series ; the others are mainly from Tenney's "Manual of Zoölogy," "Natural History of Animals," and other works of Tenney's Natural History Series.

August, 1868.





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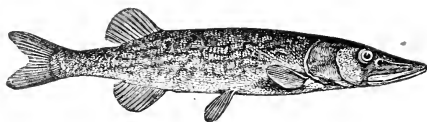
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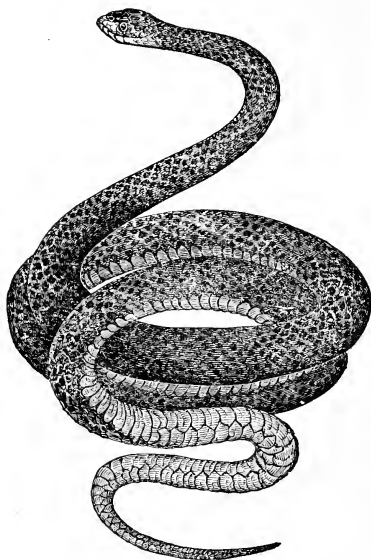




PICTURES AND STORIES OF ANIMALS.

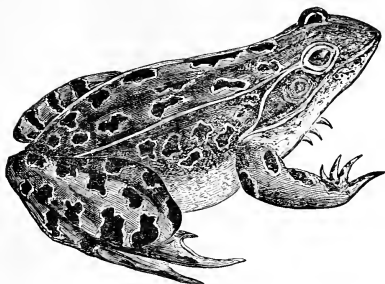
IN this little book I will show you pictures and tell you stories of the curious Turtles with their hard shells ; of the great hungry Alligators which live in the swamps and rivers in the warm parts of our country ; of the lively little Lizards which live under stones and on trees in the warm regions ; of Snakes that glide through the grass in the meadow ; of the Frogs that live in the ponds, and croak at night ; of the Toads that live in the fields and in gardens, and feed upon worms and insects ; of the Salamanders which we find under stones, and under old logs in the woods ; and of the Tritons and Fishes that live in the water.

scaly, and they have no legs, and they are called Snakes or Serpents. Here is a picture of one.



A Serpent.

Other kinds of reptiles have a short body, and they have no shell and no scales. They are called Frogs and Toads. On the next page there is a picture of one of this kind.



A Frog.

Other kinds are long and shaped like a lizard, but they have no shell and no scales, and they are called Salamanders and Tritons. Here is a picture of one of them.



A Salamander.

Other kinds of reptiles are long like a snake, but they have no scales, and their eyes are so small that they can hardly see, and so they are called Cæcilians, a word which means that they are blind reptiles.

Now I think you will like to hear more about these strange-looking animals, and I will tell you first about the Turtles.

THE TURTLES.

You remember, Amy and Sanny, the two pretty, cunning little ones which we found last spring in the meadow, and which we brought home with us, and placed in a basin of water; you put pebbles and little plants in the water, so that the turtles might think — if turtles do think — that they were in a little brook or pond. These turtles were very small, not much larger than a penny, for they were only a few months old. They were just baby turtles; and they were as much more cunning and prettier to play with than the large turtles, as babies and little people are more cunning and prettier to play with than the large, grown-up people.

Our little turtles seemed to be very happy in their new home. Sometimes they would hide among the plants in the water, sometimes they

would swim about; at other times they would crawl out of the water and get upon the stones and there rest awhile. In the evening they seemed to be more lively than at any other time, and more hungry too; and then you used to catch flies for them to eat, and how quickly they would dart after these little flies, sometimes snapping them up almost as soon as they touched the water. When the summer came, and you were going to visit your Auntie and your little cousin Frank, you had learned to like these little turtles so well that you could not think of leaving them, so you put them in a box and carried them in the steamboat, and in the cars, several hundred miles; and when you opened the box at Auntie's, and put them again in water, they were as lively as ever.

There are a great many kinds of turtles, or tortoises, for they are called by both of these names. Some of them live upon the land, and are called the Land Turtles; others live in ponds and streams, and are called the Pond and River Turtles; others live in the sea, and are called the Sea Turtles.

Almost all of the turtles have a hard shell, which is covered with horny plates, but there are a few kinds which have a tough leather-like skin. The shell of turtles is so hard and firm that they cannot move any part of the body except the head, neck, legs, and tail. When the turtles are walking, or swimming, these parts are stretched out far beyond the edge of the shell, but when they are alarmed, or disturbed, they draw these parts into the shell, which then almost covers them.

When you pick up one of these animals, you must be very careful and not let it get hold of your hand or finger, for many kinds can bite very hard; the turtles have no teeth with which to bite, but their jaws are covered with horn much like that which you may see on the bill of a bird. They eat all kinds of little animals which they can catch, and they also eat the tender roots and leaves of plants; the people who catch turtles, and keep them in pens, or cages, in order to study them, and observe their habits, often feed these animals upon cabbages, turnips, and other vegetables. Sometimes turtles do not eat any-

thing for weeks and even months, and this long fasting does not seem to do them much harm. They often live to be very old ; one, a garden tortoise, was known to have lived more than two hundred years !

In the warm days of spring the turtles lay their eggs in little holes, which they dig with their feet in the dry sand. The eggs have a white shell, which in some kinds is soft, and in others is hard and brittle like the shell of birds' eggs. But the turtles do not sit upon their eggs to hatch them as the birds do ; they cover them with sand and leave them to be hatched by the warmth of the sun. The young turtles do not hatch till autumn, and then from each egg there comes a little turtle which looks like its parent, only smaller ; and as soon as they hatch they dig their way out of the sand, and crawl off to the pond or stream, and then go into the mud and stay till the next spring.

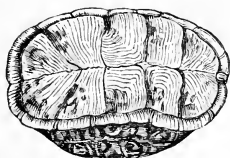
In the Southern States there is one kind of land tortoise, or turtle, called the Gopher. Its shell is three times as long as this book, and when this turtle walks it carries its shell free

from the ground instead of dragging it along, as the pond turtles do. Gophers dig holes or burrows four or five feet deep; and these holes make it dangerous for people to ride on horseback in the places where Gophers live, as the horses may break through into the holes and throw the riders.

You will remember that I have shown you the picture of a little squirrel-like animal which lives in the Western parts of our country, which is also called a Gopher; so that there is a squirrel-like gopher and a turtle gopher.

Some of the land turtles are very large. Far away in the Gallapagos Islands, in the Pacific Ocean, there are land turtles so large that it takes several men to lift one of them. In these islands all the springs of water are far up in the high lands, and when the turtles which live in the low lands wish to get water to drink, they have to go up to the high lands, and in taking these long journeys they have made beaten paths, even from the sea-coast to the springs; it was by following these paths that the people who first landed upon these islands found out where they could get pure water.

When we are walking in the woods and groves, we often find the curious and beautiful Box Turtle. Its shell is high and rounded ; the color is brown, very handsomely marked with lines and spots of bright yellow. The under part of its shell is made of two pieces which are joined together in such a manner that, after the animal has drawn itself wholly within its shell, it can then shut it so completely as to be entirely out of sight. This



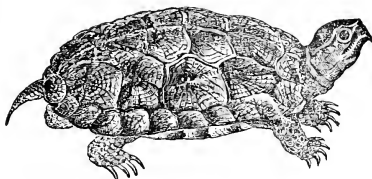
The Box Turtle.

picture shows you the Box Turtle as it looks when turned over upon its back and wholly shut into its shell. If left alone in this position, the Box Turtle soon opens its shell, puts out its head and legs, turns over, and walks slowly away. When you take one of these turtles in your hand, you must not let your fingers get caught between the two edges of the shell, for the turtle draws these

parts very firmly and tightly together. You need not be afraid of the Box Turtle, for it is timid and gentle, and will not harm you; even if it should pinch your fingers between its shell, it does not do this to hurt you; it is only frightened, and trying to shut itself up, so as not to be hurt by you. The Box Turtles feed upon tender plants and insects.

In the creeks, marshes, bogs, streams, and ponds there are very many kinds of turtles. I will tell you the names of some of them. The Salt-water Terrapin lives in the salt-water creeks, and is caught for food; large numbers of this kind are sold in the markets of New York, Philadelphia, and other cities. The Red-bellied Terrapin has beautiful red colors on the under side. The Painted Turtle is black, marked with yellow and red. We often see the Painted Turtles sunning themselves on the rocks, and on roots and old logs in the pond and river; but they are very shy, and as we come near them, they quickly drop off into the water. The Spotted or Speckled Tortoise has a black shell beautifully ornamented with yellow spots. It is very handsome, and makes a pretty pet, as it will not bite you.

Here is the picture of a tortoise which is often found in the woods, and so it is called the Wood



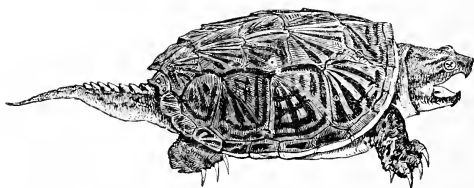
The Wood Turtle, or Tortoise.

Tortoise. Another name for it is the Sculptured Tortoise, for its shell looks as though it were most beautifully carved.

The Musk Tortoise and the Mud Tortoise are little turtles which live in bogs and ditches, and have the smell of musk.

Nearly all of the land, pond, and river turtles which I have just told you about are harmless; they may be handled without fear, if we will be careful and not put our fingers near their mouth; but there is one kind of fresh-water turtle which you must not handle, for it would bite off your finger in a moment, if it could get hold of it; and it tries to bite as soon as you touch it. From this habit of biting and snapping at everything that

comes in its way, it is named the Snapping Turtle. It stays in the water almost all the time, but comes out upon the dry land to lay its many round white eggs. It eats small reptiles, fishes, young ducks, and other little animals. Sometimes when men are fishing, this turtle snaps at the bait upon the hook,



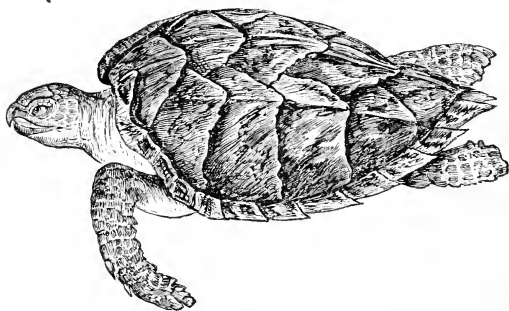
The Snapping Turtle.

and so gets caught, but it is often very difficult to get it out of the water, for the Snapping Turtles often grow to be very large and heavy. They have been found more than four feet long from the nose to the end of the tail; these large ones have a shell so hard that it will bear the weight of a man, and the turtle itself is so strong that it can walk away with a man standing upon its back. The flesh of this turtle is good for food, and it is caught in great numbers and sold in the markets.

The Soft-shelled or Three-toed Turtles have a flat body, and a long neck, and a very long snout; their shell is about as hard as leather, and they have only three nails or claws on each foot. They live in muddy waters, and feed upon fishes and other animals which they can catch. They are fierce like the Snapping Turtles, and those which live in the rivers of the Southern States sometimes kill and eat the very young alligators.

On the next page is a picture of one of the sea turtles. You can see that its legs are made for swimming, and not for walking; for the sea turtles live all the time in the water, never coming upon the land, except to lay their eggs. Their fore legs, or flippers, are much longer than the hind ones, and are very powerful, and by means of them these turtles almost fly through the water as the birds fly through the air. Their movement through the water is indeed more like flying than like swimming. This one is named the Hawk-bill Turtle, because its jaws look so much like the bill of a hawk. It lives in all the warm seas and oceans, and is from two to four feet in length. It is often called the Tortoise-shell Turtle, because it is from

this kind that the beautiful shell is obtained which is made into so many useful articles, and into beautiful ornaments of many kinds. The scales or plates which cover the bony part of the shell are, in this kind, very large, and they lap over one another like the shingles upon the roof of a building; and they are clearer and more beautifully



The Hawk-bill Turtle.

clouded and mottled than in any other kind. The colors are white, yellow, red, and a rich deep brown. The horny plates stick close to the bone of the turtle's shell, and you will like to know how they are removed, and I will tell you. After the flesh has been taken from the inside, fire is

put within the shell, and the heat causes the plates to start from the bone, and they are then easily taken off. But the plates are now curved and rough, and must be straightened and made smooth. So they are put into hot water, where they are kept until they are softened, and then they are taken out, and put into a press where they may cool slowly. After this they are scraped and filed until they are smooth and even. When two pieces are to be joined together, the edge of each is first made thin, then the pieces are heated and softened, and then one piece is lapped over the other, and they are put into a press, and heated again, and when cool they are found to be firmly united. Even the small pieces, the filings, and the powder are saved, for they can be made into plates by heat and pressure. Many years ago, far away in Greece and Rome, the rich people not only ornamented their beds and other household articles with the beautiful, polished tortoise-shell, but even the doors and pillars of their houses were adorned with this costly substance.

The Green Turtles also live in the warm seas.

They are highly prized for food, and many of them are brought every year to the markets of America and Europe. They are sometimes taken in the water by striking them with a sharp iron, — a sort of rude spear, — but usually they are caught at night, when they are upon the land, where they go to lay their eggs. The men who wish to capture them watch for them, and when the turtles come on shore they follow them and turn the turtles upon their backs. In this position the turtles are helpless, as they cannot turn back again, and those who are catching them go about turning over all they find ; then they can pick them up and pack them at their leisure ; for these turtles are not killed, but are packed alive, one upon another, in casks of sea-water, and in this way are carried to different countries. The water in the casks is changed every day in order to keep the turtles fresh and good for the market. These turtles feed upon a sea plant called turtle-grass, which grows in shallow waters, on the bottom of the sea, and sometimes large herds of turtles are seen feeding upon this grass.

The Logger-head Turtle lives in the sea, and

grows so large that its shell may be used as a bathtub for a child, and sometimes even for a boat! The flesh of this turtle is not good for food, but it furnishes an oil which burns well in lamps.

But there is one kind of sea turtle much larger than any of these which I have been telling you about. It is called the Leather-backed or Leathery Turtle, because it is covered by a thick skin instead of horny scales. This turtle lives in the Atlantic Ocean and in the Mediterranean Sea, and in some cases is eight or nine feet in length, and is heavier than a very large ox! Sometimes this kind makes a loud roaring noise, and from this fact it has been named *Sphargis*, which means to move with a noise. It is believed that the old Greeks, people who lived long ago in Greece, first made the harp or lyre by stretching strings or wires across the empty shell of the *Sphargis*, or Leather-backed Turtle.

I have told you that all of the sea turtles come to the land to lay their eggs. They come only in the night-time; but on bright moonlight nights they have been watched by Audubon and others, and in his interesting books he has told what he

has seen, and I will tell you. When the sea turtle comes near the shore where she intends to lay her eggs, she raises her head from the water and looks carefully around to see if there is any enemy near that may disturb her. If she hears any noise, or thinks she is in danger, she instantly sinks in the water and swims away. If she sees no danger, she makes a loud hissing sound, and then swims to the shore, and crawls up the bank over the sand and pebbles, till she finds a good place to make her nest. She then looks around her, and, seeing nothing to disturb her, she begins to make a hole in the sand by digging it from under her body with her hind flippers. In a few minutes she digs a hole one or two feet deep. She then lays in this hole a hundred and fifty or two hundred eggs, and scrapes the sand back over them, smooths the surface of the sand, and then crawls back to the sea, and swims away. The eggs hatch by the heat of the sun, and the young turtles dig their way out through the sand, and then hasten to the sea.

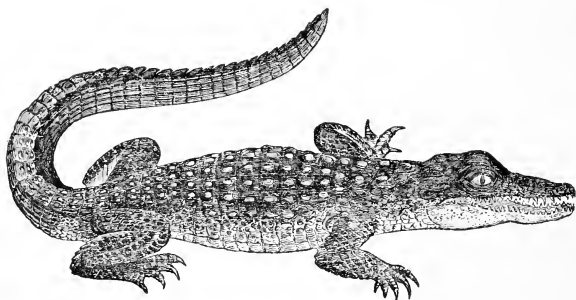
But there have lived turtles vastly larger than any of those of which I have told you. Far away

in India, at a place called the Sewalik Hills, there have been found the bones and shell of a great turtle or tortoise which lived many thousand years ago, and which was as large as two or three Leather-backed Turtles would be if they could be made into one. Its shell was twelve feet long, — twice as long as a tall man, — and its length, from its head to the end of its tail, was about twenty feet. The feet and legs of this huge tortoise were probably about as large as those of the elephant!

THE SAURIANS AND LIZARDS.

IN the creeks and rivers, and about the swamps, bogs, and marshes of the warm parts of our country, live the great hungry Alligators. Some of these animals grow to be fifteen or twenty feet in length. The Alligator is covered with hard bony plates which are set into its tough skin. Its mouth is very large, and has a row of sharp teeth in each jaw, and its eyes have three lids. Its tail is long and very powerful, and is used in

swimming, and in striking and capturing prey. When the Alligator comes near an animal, which it wishes to eat, it strikes the animal with its tail in such a manner as to force it towards its wide open mouth. It feeds upon fishes and all other



The Alligator.

animals which it can catch, and sometimes it attacks children, and even men. It watches for and captures animals that come to the water to drink; and it is said that, knowing this, the dogs, when thirsty, come to the edge of the water and bark to attract the Alligators to the spot where they are; and the dogs then run away as fast as they can to some other part of the river,

and have time to drink before the Alligators can reach them.

The Alligator likes to lie in the warm sunshine, and during the hottest part of the day it crawls out of the water and sleeps upon the banks; but as the night comes on it goes back into the water again, and moves about in search of food. When it gets hold of a land animal too large to be swallowed at once, it drags it under the water to drown it, and then hides the body under the bank. After several days have passed, and the flesh has become soft, it draws the body on shore and devours it. The teeth of the Alligator, although sharp, are not made for cutting into and biting the flesh of animals that are freshly killed. At night, while searching for their prey, Alligators make a loud, harsh, bellowing sound, which is sometimes very terrific.

The Alligator lays from fifty to sixty eggs, which are about as large as those of a goose. She digs a deep hole in the sand and places her eggs in layers, covering each layer with leaves and dry grass, and the whole with sand. She watches the nest day by day, until the young are

hatched, and then she leads them to the water, and guards them for many weeks.

When the cold weather comes, the alligators bury themselves in the mud at the bottom of the creeks and rivers, and spend the winter in sleep.

The Crocodile is very much like the alligator, but it is larger, sometimes growing to be thirty feet in length. It is the largest of all the reptiles now living upon the earth. One kind lives in the river Nile, and in other rivers in the warm parts of Africa, another kind lives in the river Ganges and in other rivers of India, and is often called the Gavial. The Crocodile is very powerful, ferocious, and cunning.

Like the Alligator, the Crocodile moves rapidly in the water, but it moves slowly upon the land. When the natives find one upon the land, they attack it with spears and harpoons, and soon kill it, but it requires great courage and skill to attack and kill a Crocodile in the water. The teeth of the Crocodile are large and strong and sharp, and when one of them is worn out another grows in its place. Like the Alligator, it has no lips, and so its large teeth are always seen, even when the

mouth is shut. Its tongue is flat, and is fixed so closely to the bottom of the mouth that the people who lived long ago believed it to be without a tongue! Like the Alligator, the Crocodile often kills very large animals by drowning them. Seizing an animal, it drags it beneath the water and holds it there till the animal is drowned. Perhaps you would like to know why the Crocodile itself does not drown, while, with its mouth wide open, it holds its struggling prey beneath the water. I will tell you. Far back in the mouth there are two broad plates, sometimes called valves, one of which grows from the upper part of the mouth, and the other from the lower part; these plates stand across the back part of the mouth, and tightly shut together when the Crocodile has to hold its mouth open under the water, and so no water can get into its throat or wind-pipe. Now the nostrils are at the very end of its long snout, and the air-passages lead back and open into the mouth behind the plates of which I have just told you; so that the Crocodile can hold in its powerful jaws its struggling victim beneath the water, and at the same time breathe as well

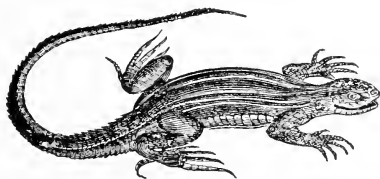
as ever, by merely keeping the tip of its nose above the surface of the water.

When upon the land the Crocodile is often attended by a little bird, which moves fearlessly around it, and even walks into its wide open mouth, and picks up the particles of food which it finds there. The Crocodile seems to like to have this bird near him, and he does not try to hurt it.

Many years ago the people in Egypt used to worship the Crocodile; they kept it in their temples, and fed it upon cooked meats, cake, and wine; they adorned its ears with rings of gold and with precious stones, and its feet with bracelets!

Many thousand years ago, and long before men lived upon the earth, there were many kinds of great reptiles which were different from, and much larger than, any that are living now. Some of these lived upon the land, and fed upon other animals; others lived upon the land, and fed upon vegetation; others lived in the sea, and fed upon fishes and all kinds of animals which they could catch; and others flew about in the air,

like bats and birds. Some kinds of these reptiles were fifty or sixty feet long, and one kind had jaws six feet long, and an eye as large as the top of your hat! The bones of these huge animals have been dug out of the rocks in England and in other parts of Europe, and you may see them in the Geological Museums where such things are carefully preserved. When these animals lived upon the earth there were not only no men, but not even lions, dogs, horses, nor cattle. The great reptiles whose bones we now find were the largest and the most important of all the animals then living upon the earth.



The Six-lined Lizard.

This is a picture of the Six-lined or Striped Lizard, a pretty little animal that is often seen in the warm parts of our country. It is about

as long as this book, and its color is brown, with six yellow lines along its back. It is a timid little creature, runs swiftly, and eats flies and other insects for its supper.

There are very many kinds of lizards. Some kinds are even smaller than the one whose picture I have here shown you; others, like the Iguana of South America, are four or five feet in length. Some kinds live upon the ground and hide in burrows; some kinds live all the time upon trees, and run swiftly about among the branches, hunting for insects, upon which they like to feed. Some of the lizards have bright and beautiful colors, and when the sun is shining upon them they are very brilliant.

There is one kind of little lizard in the Southern States, only a few inches long, that is seen in the gardens and about the houses, and which often comes into the house and runs about over the carpet, sofa, chairs, up and down the windows, and on the walls and ceiling, searching for flies. It is of a beautiful green color, and it is named the Green Lizard.

The Geckos, of the warm parts of Europe and

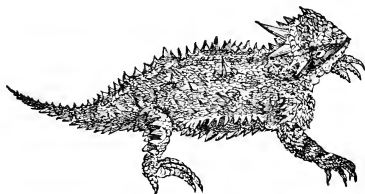
Asia, are other little lizards which live about houses and which run up the walls of a room, and even walk on the ceiling as readily as flies can walk in such places. The reason they can do so is, because the under surface of each of the toes is so made that every time they step an empty space, or vacuum, is formed under the toes, and the animal is held to the wall or ceiling by the air that presses on the toes. But you do not quite understand this now, and so you may just remember that the Geckos can run up the sides of the room, and walk on the ceiling overhead without falling; and when you are older you will understand how they can do this.

Lizards are sometimes tamed. The officers living at a fort in the island of Ceylon tamed a Gecko, and taught it to come every day to the dinner-table, as soon as the dessert was brought on. Once they were absent for several months, and the house was partly torn to pieces and repaired, and they did not expect to see the Gecko any more; but on their return the tame Gecko again made his appearance at the very first dinner that was served.

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In the warm regions of Africa, Asia, and Europe there is a very curious lizard several inches in length, called the Chameleon. Its body is much flattened on the sides, and on its back there is a sharp and somewhat toothed ridge. This lizard lives on trees, and so its feet are fitted for climbing; and its tail is prehensile, that is, it is made for grasping twigs and branches, and it thus aids the lizard in holding firmly to any branch upon which it wishes to stay. The tongue is a sort of hollow tube, the largest at the end, and on the end there is a sticky fluid, and this tongue can be instantly darted out to a very great length, and instantly withdrawn. It uses its tongue in catching insects upon which it feeds. It creeps slowly and quietly along the branches, and when it sees an insect near enough to itself, it quickly darts forth its long tongue; the insect is caught on the end of it, and is instantly drawn into the mouth of the Chameleon and swallowed, all of which is done so quickly that your eye could scarcely follow the motions. Sometimes this lizard remains on a branch perfectly still for hours together; but if a fly or other insect comes

near, it quickly secures it in the way I have just told you of. The Chameleon can move one eye and not move the other; and it can move one eye one way, and at the same time move the other eye a different way. The eyes are all the time covered with a sort of eyelid, in which there is one small opening for the lizard to see through. But the most curious thing about the Chameleon is, that it can quickly change its color; so that in the course of a few moments it often shows all the colors of the rainbow.



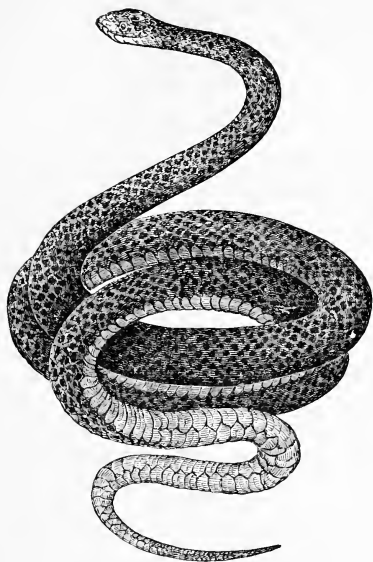
The Horned Toad.

One curious lizard which lives in Texas has spines on its head and back and sides, and it looks a little like a toad, and so it is named the Horned Toad. It can run quite fast on the ground, but cannot climb trees. It can live a long time

without eating. About four months ago one of these lizards was sent by mail, in a tin box, from Texas to a gentleman in Williamstown, Massachusetts, and although it has been offered food, it has not been known to eat anything during all this time; but it still appears as well as ever. On cool days it is sluggish and stupid, but on warm days it is very lively. If you pull its toes or tail it will quickly spring at your hand as though it would bite you.

THE SNAKES, OR SERPENTS.

IN the warm days of spring, the Snakes come out of their hiding-places, where they have been asleep all the long winter; they lie on the banks in the warm sunshine, and you may see some of them every day when you are walking or playing in the fields and meadows. Some are striped, and these are called the Striped Snakes; others live near or in the water, and are called the Water Snakes; others are black, and are called the Black Snakes; others are green, and are



The Black Snake.

called the Green Snakes ; others are gray, marked with chocolate-colored blotches, and are called Adders, and sometimes Milk-Snakes and Chicken-Snakes ; and there are very many others, — more than a hundred kinds in North America.

Almost all of the snakes in our country are harmless, and you need not be afraid of them ;

but there are some kinds which are very dangerous, for their bite is so poisonous that it kills animals and men. The poisonous snakes in our country are the Rattlesnake, the Copperhead, the Moccasin, and the Harlequin. The Moccasin and the Harlequin live only in the warm parts of our country,—in the Southern States. The Rattlesnake lives on the mountains, and in rough rocky places, and in summer it comes into the meadows. It has two long grooved teeth or fangs growing from the upper jaw, and these are connected with a sac of poison. It gets its name of Rattlesnake from the horn-like rattles upon its tail. When you go near one of these snakes, it quickly coils itself, shakes its rattle, making a loud noise, and then opening wide its mouth, it instantly strikes forward at your hand, or foot, or any part of you that it can reach. But the Rattlesnake does not run after or chase any one; it only darts forward so as to bite, and it cannot reach any farther than the length of its body; so if persons step backward as soon as they hear the rattle, there is not much danger of being bitten.

There is one kind of Rattlesnake which lives on the prairies in the Western part of our country,

and is called the Prairie Rattlesnake, or the Massasauga.

The Boas and Anacondas are great snakes thirty feet in length ; they live in South America. Other snakes as large are found in Africa, and they are called Pythons.

Although snakes have no feet, they move over the ground, or on trees, or through the water very swiftly. Their teeth are sharp, and fitted for seizing and holding prey. Their tongue is long, slender, and forked.

Snakes feed upon frogs, toads, birds, squirrels, rabbits, and all animals which they can capture and swallow ; for they swallow their prey whole, and their head and throat stretch so much that they can swallow animals that are much larger than themselves. The largest snakes can swallow dogs, deer, and even larger animals, after having first crushed them and broken their bones, by coiling tightly around them.

Snakes shed their skin every year, and the cast-off skin comes off whole, so that it looks like the snake itself. All of the common kinds of snakes lay eggs, from which their young are hatched, but the poisonous kinds bring forth living young.

THE FROGS, TOADS, AND SALAMANDERS.

TURTLES, alligators, lizards, and snakes lay their eggs in dry places in the ground ; and when the eggs hatch, the little turtles, alligators, lizards, and snakes look just like their parents, only smaller. But Frogs and Toads lay their eggs in the water, a single frog sometimes laying as many as fourteen hundred eggs ; and when the young frog or toad comes from the egg it does not look at all like its parent. The young frog has a large head and body, a long tail, a tuft of gills on each side of the neck, and no legs ; and it appears as you see it in this picture. Its little mouth has small



A Young Frog.

teeth with which it bites and eats the plants that grow in the water, and when the little Frog wishes to rest, it clings to the water-plants by its lower

lip. When it gets a little older the tufts of gills grow smaller, and are covered up by a thin skin, and then the young frog, or tadpole, as it is called, breathes like a fish, and looks like this picture.



Very soon the hind legs begin to grow, and then the tadpole looks as you see it in this picture.



After a little while the fore legs begin to appear, and then our little frog looks like this picture.



The mouth is now larger, the eyes get lids, the lungs begin to form, the tail becomes shorter



and smaller, and the young frog looks as you see it here; and by and by it leaves the water,

breathes air and feeds upon little animals instead of plants. Here is a picture which shows you how



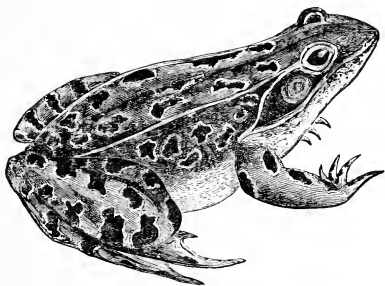
it now looks. Toads hatch and grow in the same way.

There are many kinds of frogs. Some kinds are longer than this book; others, even when full-grown, are no larger than your thumb. Almost all live near brooks, rivers, and ponds, or in swamps and wet meadows, but some kinds — as the Tree Frogs — live all the summer-time upon bushes and trees, going to the water only to lay their eggs.

Frogs are shy little animals, and leap away as we come near them. They are very lively in the summer, but when the cold autumn weather comes they crawl into holes, and under rocks, in the banks of the streams, or bury themselves in the mud, where they stay till the warm spring days come again. Sometimes many hundreds lie crowded together, as though they were trying to keep

each other warm. Some of the frogs have very bright and beautiful colors, and their eyes are large and brilliant.

The Bulfrog is the largest of the frogs, and it makes a very loud croaking sound in the night and in cloudy days; the Green Frog likes to live near cool springs; the Leopard Frog is very hand-



The Leopard Frog.

some; its color is bright green, with brown spots edged with yellow; the Pickerel Frog is brown, covered with dark spots; its under parts are yellow. The Wood Frog lives in the woods, and goes to the water only in the spring to lay its eggs. It is not longer than your finger, and its color is reddish, with a brown mark on each side. You

will often see it when walking in the woods, and you need not be afraid to catch it, if you can, and pick it up. All of the frogs are harmless; they are not poisonous to touch, and they do not bite.

The Tree Frogs have their toes so broad and flat and sticky that they can live on the trunks and branches of trees, and even on the smooth leaves, without falling off. They often look so much like the bark of the tree that it is hard to find them, even after you know on which tree they are. They are very noisy little creatures, and you may hear them just before night, and in cloudy weather. They are very nimble, and leap from branch to branch, and move about on the slender twigs even when the wind is blowing very hard. In the winter they get into the mud to shelter themselves from the cold.



The Cricket Frog.

This little fellow, and those like him, are some-

times called the Cricket Frogs. They are about as large as the largest crickets, and in the spring-time you may hear their loud shrill note, or *peep*, through all the night. They live on plants close to the water; but you must look very carefully if you would find one of them, for they are very quiet, and never peep when we come near them.

The flesh of frogs is very delicate, and many people like to eat it, as well as you like to eat the delicate flesh of chickens. In France, Germany, Italy, and Austria, frogs are very highly prized for food; and they are kept in froggeries, and fed and fattened so as to be in good condition for the market.

Toads look very much like frogs, but they do not have such bright, pretty colors, and their skin is rough and warty. They live in gardens and in fields, and go to the water only in the spring, when they lay their eggs. In the daytime they stay in dark corners and in holes, but at night they come out of their hiding-places, and hop about in search of worms and insects, upon which they feed. They are very useful in the garden, for they destroy many insects and caterpillars which, if

allowed to live, would do great harm by eating the leaves of the flowers and the vegetables. The toads never eat the leaves of plants.

But the most curious thing about a toad or a frog is its tongue. This is very long, and fixed to the fore part of the jaw, and the tip is turned backward into the mouth, and they can dart out this tongue and snap up a worm or an insect so quickly that your eye cannot follow the motion.

The eyes of toads are very beautiful, and the next time you see one of these little animals I want you to look at its eyes and see how very bright they are.

Toads are sometimes kept for pets. One was once kept for forty years, and it became very tame. When its master came home at night, and lighted a candle, it would hop out of its hiding-place and come to get its supper, and it was not afraid when persons came near it.

In Guiana and Surinam, in South America, there is a toad that is different from any toad, that you will ever see in this country. It is called the Pipa, or Surinam Toad. It lives in dark corners near the houses, but goes into the water to lay its eggs.

After the eggs are laid, the male toad takes them and puts them in cells or pits on the back of the female, and there they are carried till they hatch into perfect little toads.

Toads can live a long time without eating, and even with a small amount of air. Living toads have been found in cavities in rocks and in the trunks of trees; but it is believed that they were not wholly shut away from the air, and that there were cracks and openings where air could enter, and thus they were kept alive.



The Salamander.

Here is a picture of a little animal which lives under stones and under old logs in the woods, and in damp shady places; sometimes it is found in cellars. It looks very much like a lizard, but it has a smooth skin, and all the lizards have scales. It is called a Salamander. Sometimes you will find under a stone or log three or four

of these little animals; you need not fear them, for they are harmless, feeble little creatures. They eat worms, snails, flies, and other small animals. In rainy days you may see in the garden, and perhaps in the road, a small red salamander, and you may be told that it has rained down; but it has only come out of its hiding-place to look for little insects to eat. Some people have said that salamanders can pass through fire and not be burned, and that they even put out a fire if they run through it; but this is not true. But salamanders can cause a fluid to flow out from the pores of their skin; and when they are alarmed or provoked the fluid comes out in larger quantities; and so when they are thrown into the fire, this fluid coming out all over the body may preserve them from harm for a moment or two, but only for a very short time.

In the ponds you may see the little salamanders which live all of the time in the water. Every few minutes they come to the top of the water to breathe the air; then they swim away, and crawl about on the bottom, or climb up the stems of plants. They have the sides of the tail flatter

than the salamanders which live upon the land, and that helps them to swim easily. They are called Tritons, and here is a picture of one of them.

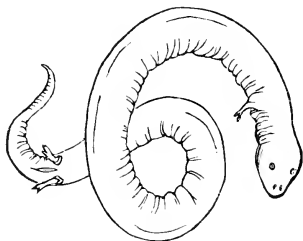


The Triton.

The Tritons and Salamanders have the wonderful power to renew any part of the body which has been lost. If the legs are cut off, others will grow again in a few months, and even if the new ones are cut off, others still will grow in their places. And it is the same with the eye; if one is destroyed a new one will grow to supply the loss!

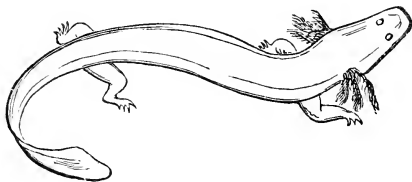
The Congo Snake is an ugly-looking, long-bodied animal, with little legs. It lives in muddy ditches in the Southern States; and it is sometimes found burrowing far down in mud, in the same way as we find earth-worms. The negroes fear it, and think that it can bite and poison them, but it is harmless; and although

called a snake, it is not one, but is more like a salamander. It eats little fishes and other



The Congo Snake.

small animals. It spends the winter in the mud ; sometimes large numbers collect together and remain in a sleepy, torpid state till spring.

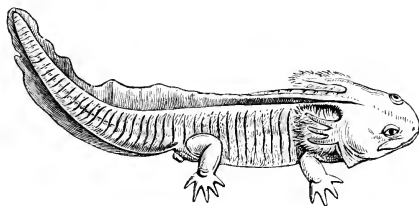


The Menobranchus.

Sometimes when the fishermen are fishing in the lakes of the northern part of our country, they catch a curious animal which looks like a

salamander, only it has branching gills on the sides of the neck. The fishermen call it the Mud Puppy, but its true name is Menobranchus, which means that the gills remain just as you see them in the picture, and do not disappear when the animal grows older, as they do in young salamanders, frogs, and toads. This animal is one or two feet long; it crawls along on the bottom of the lakes and rivers, or swims about in the water, and eats worms and little fishes and other small animals which it can catch. One of these animals once took a journey of nearly a thousand miles. It was put into a pail of water and sent from Detroit to a gentleman in Poughkeepsie, New York. When it got to the end of its journey it was put into a large basin of water, where it lived more than two months. It would lie still for hours in the basin of water, merely moving its gills; but if any one pinched its foot it would splash around in a very lively manner, and would often jump out of the basin on to the floor; but it was always glad to get back into the water again. When the water had not been changed for some time it would hold its gills

still, and then they grew dark colored ; when fresh water was put in, it would begin to move its gills, and they soon became of a beautiful red color. But it did not seem to feel quite at home in its new abode, and it would not eat anything that was offered it, and at last one morning it was found dead ; and so we had its picture taken, and then put the animal itself into a jar of alcohol, to preserve it for study.



The Siredon, or Axolotl.

In the lakes of Mexico there is found an animal which looks very much like the one I have just told you about. It is called the Axolotl. It is caught and sold in the markets, for the Mexicans use it for food.



You never pass the bridge over the brook in summer without stopping to look into the water to see the fishes, and you like to catch grasshoppers and drop them upon the top of the water and watch the fishes as they quickly dart after them, and then dart away under the bank, or under a rock, to swallow the food which they have caught. And you like to sit on the bank of the pond, when the water is smooth, and watch the fishes as they leap out of the water after the flies that are moving over its surface. And you like to go to the market and see the many kinds of fishes that are sold for food; and so I am sure you will like to see many pictures, and read some little stories of these curious animals which live all the time in the water, and which breathe in the water just as well as you breathe in the air.

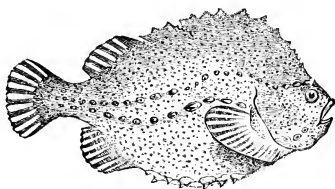
Fishes have cold blood. They have neither legs nor wings, but have fins instead of legs and wings. They have no ears that you can see, and only a few kinds can move their eyes. They can

bend the body sidewise, but not up and down and they swim mostly by means of their tail and balance themselves with their fins; those that live in running water lie with the head up stream.

There are many thousand kinds of fishes. Some kinds live in swift-running brooks; other kinds live in rivers; others live in ponds and lakes; and others live in the great ocean. Some kinds live all the time where the water is shallow; other kinds live far down in the deep sea. Some kinds live near the shore; others live in the open sea, far from any land. Some kinds of fishes live in warm parts of the sea, and they cannot bear the cold; other kinds live where the waters are cold, and many of them would die if they were to go into the warm waters of the warm or hot regions.

Some kinds of fishes are very small, never growing longer than your finger; others are as large as your arm; others are as large as you are; and some kinds are twenty or thirty feet long, and so heavy that it would take several horses to draw one of them, were it upon the land.

And the Fishes vary greatly in their form. Some kinds are short and broad, like the Lump-Fish ;



The Lump-Fish.

others are very long and slender, like the Pipe-



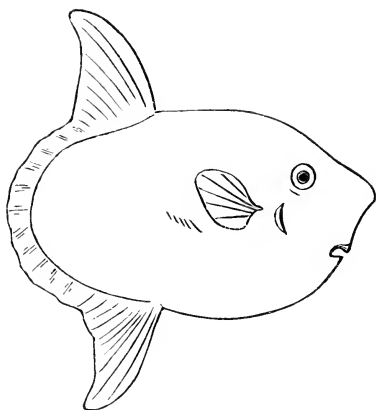
The Pipe-Fish.

Fish ; some kinds are very curious in their form,



The Sea-Horse.

as the Sea-Horse ; some kinds, like the Sun-Fish, are very ugly in shape, and seem to us to be deformed ; others are very elegant in form, and



The Sun-Fish.

most beautifully marked with spots and bands,



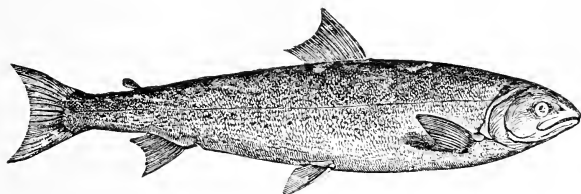
The Brook-Trout.



The Mackerel.

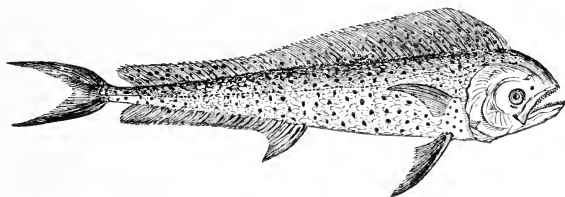
as the pretty Brook-Trout, the Mackerel, and

the beautiful Salmon. Some kinds have the most beautiful and splendid colors, as beautiful and



The Salmon.

as splendid as those of humming-birds ; they shine like gold and silver and precious stones. The

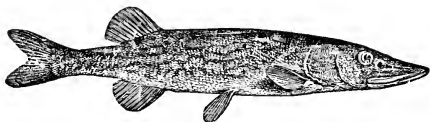


The Dolphin.

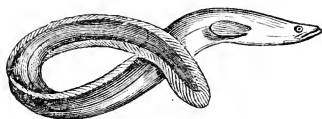
Dolphin of the warm seas is one of these beautiful fishes.

Almost all of the fishes which we see have the skin covered with thin horny scales, which lap over one another like the shingles upon the

roof of a building; the Pickerel is one of this kind; but there are other kinds, such as the Eel and the Horned-Pout, which have the skin soft



The Pickerel.



The Eel.

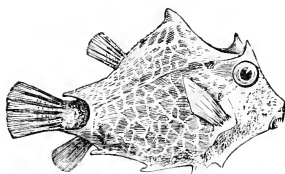


The Horned-Pout.

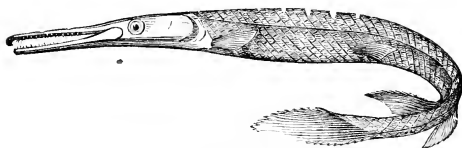
and smooth, and which seem to be wholly without scales, but which in fact have very small scales, so small that they can scarcely be seen by the naked eye.

In the ocean there are some very curious fishes, which have the head and body covered with solid, bony plates, which are so firmly joined together that these fishes seem to be in a box, and they can move only the mouth, tail, and fins; they are called the Trunk-Fishes, and here is a picture of one

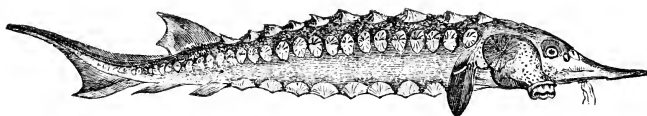
of them. In the great lakes and rivers of our country are fishes called Gar-Pikes, which have the scales covered with enamel, so that they are



The Trunk-Fish.



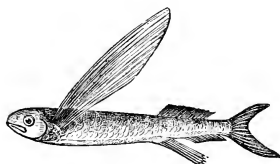
The Gar-Pike.



The Sturgeon.

as hard as a stone. Other fishes, like the Sturgeon, have the body covered by rows of bony plates; and others are armed with spines, like the Porcupine-Fish.

Many kinds of fishes swim very swiftly through the water ; it is said that the Salmon sometimes goes as many as twenty-five miles in an hour. Some kinds of fishes have fins so large that they are able to sustain themselves for a few moments



The Flying-Fish.

in the air, and thus they seem to fly. Some kinds of fishes move by leaping ; some kinds can crawl over the ground from one pond to another ; and in India there are little fishes which are known to leave the water and ascend the trees which are growing in or near the water ; and they are called by the people of that country by a name which means “ Tree-climbers.”

Fishes are very hungry animals. Some kinds feed upon worms, water-insects, and shell-animals ; some kinds of the sea-fishes feed upon crabs, shell-animals, and star-fishes ; some kinds of fishes eat plants ; but most kinds feed upon fishes smaller

than themselves, and which they swallow whole. Although fishes almost always swallow their prey whole, they are not without teeth, for nearly all kinds have the jaws and often all the bones of the mouth, and even the tongue and throat, well armed with teeth. Some kinds have the teeth straight; some have them curved backward like hooks; some kinds have them notched like a saw; some kinds have them flat, with sharp cutting edges; some kinds have rounded teeth, which are placed in the mouth in such a manner that they look like the paving-stones of a street; some kinds have teeth so slender and so thickly set that they look like the bristles of a brush; and others have teeth so fine and so close together that they seem like velvet.

Fishes lay their eggs on the sand in the water, and each fish lays a great number of eggs,—some kinds lay more than you could count in a year! Some kinds guard their eggs; some kinds even make nests for them; but most kinds of fishes leave them to hatch without their care. A few kinds bring forth living young.

Fishes are good for food, and vast numbers are

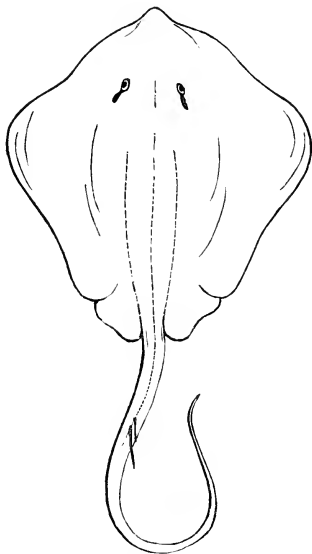
caught and eaten every year. There are hundreds of thousands of people who depend upon fishes for a part of their daily food.

THE SKATES AND SHARKS.

THERE are in every sea many fishes which are broad and flat, and have a form like that which you see in the picture on the next page. These broad and flat fishes are called Rays, or Skates. Some kinds have a long and very slender tail; other kinds have the tail stout and thick. Some kinds are only one or two feet long; other kinds are five or six feet in length; and one kind is from sixteen to twenty feet wide, and weighs many tons! One of these fishes was once caught, which was so heavy that it took seven yoke of oxen to draw it upon the land!

The Rays or Skates live on or near the bottom of the sea, and feed upon fishes, crabs, squids, clams, and sea snails. As they move through the water, they move their broad flat sides somewhat as a great bird moves its wings when flying.

and so some kinds of the Skates have been called Sea-Eagles. Some kinds have the body and tail armed with sharp spines ; others have spines only

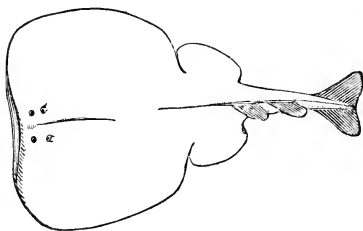


The Ray, or Skate.

upon the tail. If disturbed, they defend themselves by striking and lashing with the tail, and in this way they are able to inflict very severe wounds.

It is said that the largest rays sometimes destroy men. Once there was a soldier on a vessel near the island of Trinidad, who wished to desert, that is, he wished to get away, and so he jumped into the sea in order to swim ashore. There was a great ray near by, and it threw one of its great fins over him, and he was never seen again.

One kind of Ray is called the Torpedo; this kind is able to give electric shocks to persons when they touch it, or when they are in the water very near it. It is known that it gives shocks to

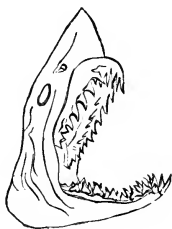


The Torpedo.

fishes and other animals which it wishes to eat, and thus makes them motionless; it can then easily catch them. The organs by means of which the Torpedo gives the shocks are placed in a large

group or cluster on the two sides of the forward part of the body, and when they are uncovered by removing the skin and flesh they look a little like honey-comb.

The Sharks are very fierce fishes which live in almost every part of the ocean. Some kinds are as long as you are; some kinds are two or three times as long as you are; and others are twenty or thirty feet long, and so heavy that it would take several oxen or horses to draw one of them out of the water upon the shore. The Sharks have a sharp, or a rounded nose, the fins and tail are very powerful, and the skin of their body is



A Shark's Head.

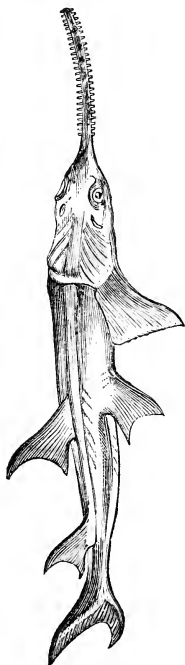
covered with small hard spines, and their mouth is armed with teeth which are as sharp as a sur-

geon's lancet. The tail is so powerful that with it the Shark can break a man's arm or leg by a single stroke. Instead of having the gills free on their outer edge, as in the common kinds of fishes, like trout, pickerel, and cod, the Sharks have their gills fixed at the outer edge, and they have five holes or slits on each side of the neck,—one slit or hole to each gill; through these holes the water which passes through the gills escapes. You can see where these slits are by looking at the picture of the Hammer-head and the Thresher Shark. The Sharks are very hungry, greedy animals, and they eat fishes, seals, and all other animals which they can catch, and the large kinds quickly seize and eat a man if they see him in the water near them; for these huge fishes are very fond of human flesh; one has been known to follow a ship day after day to pick up the food which may be thrown into the water, and expecting perhaps to make a meal of some poor sailor or other person who may fall overboard into the sea. A Shark has been known to seize a fisherman while in his boat, and to snap up a sailor who was outside of the bulwarks of his vessel. The mouth of the Shark is very large;

and it is in the form of a half-circle. Their teeth are in several rows. The White Shark—one of the largest kinds—has six rows of broad sharp teeth. The forward row stands up straight from the jaws, ready for use, while the rows behind this lie flat in the mouth; but as fast as those in front wear away a new row rises to take its place, and so the Shark's teeth are all of the time good and sharp. The mouth of the Shark is placed on the under side of the head, so that it has to turn on its back or side in order to seize any animal which is above itself in the water. Some of the natives on the coast of Africa are so bold that they often swim near the Shark, and when the huge hungry fish turns over to bite them they plunge a knife into it, and thus destroy it.

One kind of shark has the snout extended into a very long flat blade of bone, armed on each edge with bony spines which look like teeth, and which are very strong, sharp, and pointed. This blade looks a little like a saw, and this kind of Shark is called the Saw-Fish. With its strong and terrible weapon it attacks large fishes, and even the largest whales. The whale fights by means

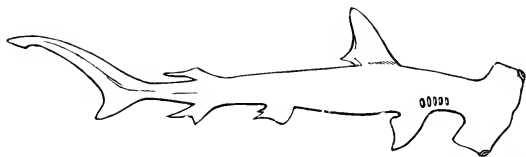
of his tail, and if he can but strike the Saw-Fish with this powerful weapon, he can kill it at a single



The Saw-Fish.

stroke. But when the whale tries to strike it, the Saw-Fish bounds into the air, thus escaping

the blow, and then returns and plunges its long snout into the sides of its huge enemy; and thus the combat goes on till one of them is killed.



The Hammer-head Shark.

The Hammer-head Shark has a very curious and broad head, as you see it in the picture; it is shaped like a double-headed hammer. The eyes of this curious shark are at the two ends of the hammer-shaped head, and are quite large; they are gray, and the iris is of a golden color; and it is said that when the animal is angry the iris has the color of flame, and looks very terrific. The mouth is under the head near where it joins to the body. This shark is ten or twelve feet in length, and is very bold and hungry, and attacks other large fishes, and can easily kill a man.

The Thresher Shark has the upper lobe of the

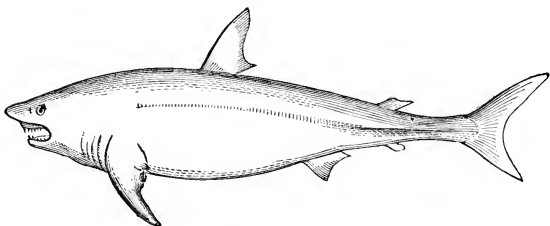
tail very long,—almost as long as all the rest of the fish. It gets its name of Thresher from



The Thresher Shark.

its habit of attacking large fishes, and even whales, and striking them violent blows with its long tail. It is sometimes called the Sea-Fox.

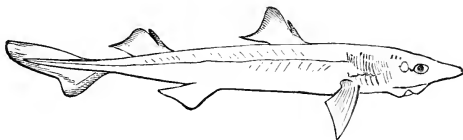
The Mackerel Shark is stout and thick. It is



The Mackerel Shark.

often seen in pursuit of mackerel, upon which it likes to feed. It is about eight feet long.

The Dog-Fish Shark has sharp spines in the fins of the back. These sharks are often seen in large schools; twenty thousand were once caught



The Dog-Fish Shark.

in a seine on the coast of England. They are captured for the oil which they furnish. The eggs of this shark are enclosed in hard horny shells of an oblong form; at each of the four corners

of the case is a long thread-like tendril, which it is said winds around and clings to sea-weeds, and other objects in the sea, and thus prevents the egg from being washed into deep water, and from being driven about and injured by the force of the waves. The empty cases are often thrown upon the beach ; they are called sea-purses and sailor's purses. Other sharks and the rays have eggs of this sort. Some kinds of sharks bring forth living young.

The flesh of sharks is tough and is not much used for food. The under parts are, however, eaten by the people of some countries, especially those of Iceland and Norway. The natives of the western coast of Africa also eat these fishes.

But sharks are caught in great numbers for the sake of their oil ; and their rough skin is dried and much used for polishing ivory and other hard substances, and it is called shagreen.

The natives on some parts of the coast of Africa worship the Shark. They hold great festivals in its honor. At these festivals they go out in boats carrying fowls, goats, and other things which the Shark likes to eat, and which they

throw overboard to the great and hungry fish ; and once every year these poor ignorant people, who have never learned to read the blessed Bible, and therefore do not know what is right and what is wrong, give the Shark a little child to eat!

Many thousand years ago there were sharks much larger than any that are living now. The teeth of some of these old sharks have been found in the clay banks at Gay Head, on Martha's Vineyard, an island on the coast of Massachusetts. Some of these teeth are much larger than your hand, even five or six inches long, and three or four inches broad!

THE STURGEONS AND GAR-PIKES.

THE Sturgeons are large fishes which have on their body rows of bony plates embedded in the skin. Their mouth has no teeth, but the jaws are hard and horny, and the mouth is readily extended and withdrawn. They feed upon fishes, worms, water-insects, and other food which they find on the bottom of the sea and rivers. In the

spring the Sturgeons ascend rivers, in order to lay their eggs.



The Sturgeon.

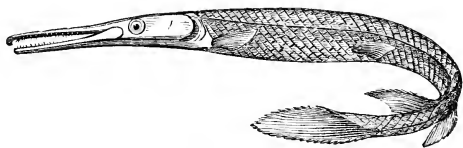
Sturgeons grow to be very large, sometimes even twenty feet in length. They are caught for food, and for the sake of the oil that can be obtained from them. The people of many countries

of Europe are fond of caviare, which is the roe, or eggs, of the Sturgeon, carefully prepared and dried ; and thousands and thousands of sturgeons are caught in order to get their eggs, and use them in making caviare. The caviare is prepared by washing the roe with vinegar or white wine ; then it is dried in the air and salted ; then pressed ; and then packed in casks and sent to the market.

Isinglass is made of the swimming-bladder of sturgeons ; for you must know that most kinds of fishes have within their body a large sac filled with air, and that it is believed that this sac helps to hold them up in the water so that they can swim better, and so it is called the swimming-bladder. Some time perhaps you may like to know how isinglass is made, and so I will tell you now. The air-bladder, or swimming-bladder, is taken from the fish, washed carefully in clean fresh water, and then hung up in the air to dry. In a day or two it is dry and stiff, and then the outside or outer coat is peeled off, and the rest is cut up into strips, and sent to the market, and is there sold under the name of isinglass. It is much used in making jellies.

The people who lived many hundred years ago in Greece and Rome were very fond of the flesh of the Sturgeon, and they caused it to be brought to their tables with great pomp and ceremony ; it was decorated with beautiful flowers, and the slaves who carried it were adorned with garlands and accompanied with music.

Sturgeons are very numerous in the Hudson River and in nearly all of the large rivers of our country ; but the largest sturgeons live in the Danube, Don, and Volga, and other large rivers of Europe.



The Gar-Pike.

The Gar-Pike has a long body, and very long jaws, which have teeth over all the inner surface, and a row of long sharp teeth along their edges. Its body is covered with scales that are as hard as a stone. It lives in the lakes and rivers of North America, and it is also found in the waters

of the warm parts of the world. It is often troublesome to the fishermen, for it frightens away other fishes, and takes off the bait without getting the hook into its hard jaws; or it cuts off the line with its sharp teeth. It is sometimes caught by making a noose at the end of the line, and as the Gar-Pike seizes the bait, it slips its jaws through the noose, and when the pole is lifted, the line is drawn tight around its jaws, and the fish is drawn ashore, or into the boat.

The skeletons or bones of rays and sharks are not much harder than leather,—they are not real bones, but are more like what is called cartilage, and so these fishes are called the Selachians, or Cartilaginous Fishes.

I will now tell you of fishes which have true bony skeletons, and so they are called the Bony Fishes.

THE BONY FISHES.

SOME kinds of fishes are very long and very slender. The Pipe-Fishes are of this sort, and they have the jaws united into a tube. They are

small, and are found in many parts of the sea; and, unlike other fishes, they carry their eggs in a sac, or pouch, after they are laid, until the eggs hatch into little fishes. And even after the young have left the sac they sometimes return to it again for shelter. If the parent fish be taken from the water, and the young be shaken out of the sac, they do not swim away, but when the



The Pipe-Fish.

parent fish is put into the water again, the young pipe-fishes again enter the pouch. The Pipe-Fishes, therefore, make you think of the Opossum and the Kangaroo which carry their young in a pouch after they are born, and shelter them there after they are able to run about. You will remember that I told you of them in the book about Mammals. The largest Pipe-Fishes are not much more than a foot in length, and some kinds are only four or five inches long.

But one of the most curious fishes is the little Sea-Horse. Its body is short and covered with

hard plates, and has only one or two fins, and its head looks like the head of a horse, and its tail is made for twisting around or grasping small

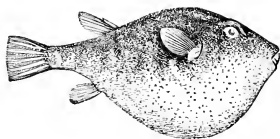


The Sea-Horse.

objects. Like a chameleon, the Sea-Horses can move one eye without moving the other, and they can move one eye one way, and at the same time move the other eye another way. Like a chameleon, also, they fix themselves by the tail when watching for prey, and they dart upon insects and other small animals that come within their reach. The Sea-Horses are very pretty animals for the aquarium. The largest ones are not more than six inches long. They do not swim along in the water as other fishes do, but they keep in an upright position very much as you see it in the picture.

Both the Pipe-Fishes and the Sea-Horses have their gills in tufts, and these tufts are covered by a large lid, which is fixed on all sides by a membrane, having only a small hole for the escape of the water that passes through the gills.

Some kinds of fishes can swell themselves up into a rounded form, by swallowing air, so that they look like a balloon; these fishes are called

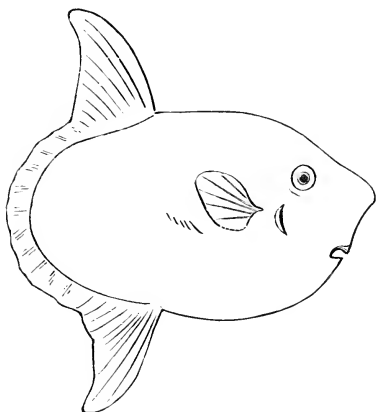


The Puffer.

Puffers, Swell-Fish, and Balloon-Fish. They are only about a foot long, and they are covered with spines, and when they swell themselves up, the spines stand out stiff all over the body, so that other and larger fishes do not then care to swallow them. From these sharp spines these fishes are often called Sea-Porcupines. These fishes have very curious teeth; some of them have only one tooth in each jaw; and these are often called *Diodons*, a name which means that they have only

two teeth; others appear as if they had two teeth in each jaw and are called Tetrodons, a name which means that they have four teeth.

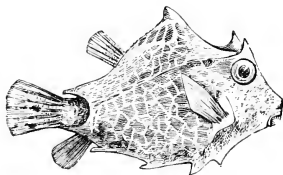
The Sun-Fishes have a short, but very broad and ugly-looking body. They live in the ocean, and



The Sun-Fish.

grow to be very large and heavy. They get the name of Sun-Fish from their rounded form, and from their silvery, shining appearance. They are also called Moon-Fishes. The Sun-Fish is often seen lying with its head out of the water, and it is said to sleep in this position.

Here is the picture of another curious fish which lives in the sea. Its head and body are covered with hard bony plates, which are so firmly fixed to-

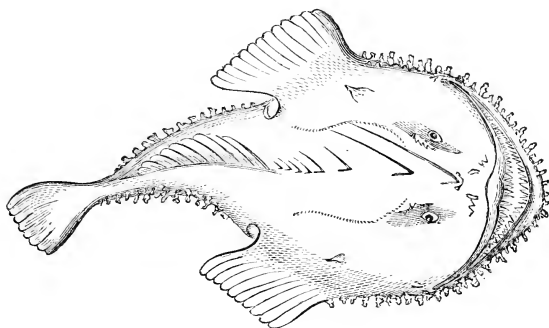


The Trunk-Fish.

gether that it can move only its mouth, fins, and tail. It seems to be shut up as if it were in a box, and so it is called the Trunk-Fish.

The Angler is a very large sea-fish, which has a mouth so wide that it can swallow fishes almost as large as itself; and it also swallows sea-birds, such as gulls, ducks, and other birds which swim in the water. This fish has many different names. It gets the name of Angler from the curious way in which it is said to catch its prey. It has upon its head one or two long horny threads, which are divided at the tip, and look like little worms. The Angler hides behind rocks and stones, or among plants, or lies close to the ground and

conceals itself by making the water muddy. Then it moves these long threads slightly, to attract the little fishes, and when they come near, thinking there is something good for them to eat, the great fish seizes and swallows them. It is sometimes called the Goose-Fish, and the Bellows-Fish,

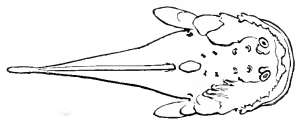


The Angler.

and also the Fishing-Frog, for it is said to be able to leap up and catch its prey, somewhat as a frog leaps. Some kinds of fishing-frogs have their fins broad and shaped a little like hands, and they are called Hand-Fishes; and they can live out of the water for two or three days, and they can bend their fins forward, and use them

as feet, and thus make their way along the ground. One kind, three or four inches long, lives on our coast.

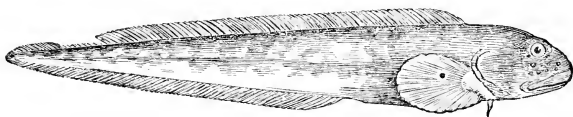
The Toad-Fish is a small sea-fish which lives near the shore, under stones, or half-buried in the



The Toad-Fish.

mud ; it has a very large head which looks a little like the head of a toad.

The Eel-Pout is a sea-fish which is two or three feet long, and has a fin extending nearly the whole length of its body, both on the upper and under



The Eel-Pout.

side. The fishermen often catch the Eel-Pouts when they are fishing for cod, and they are used for food. Men have counted the number of pieces in its back-bone, and found that there are one hundred and thirty-seven.

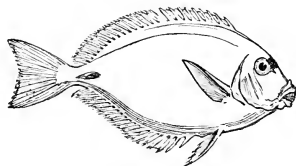
When you go to Nahant you often see men and boys standing on the rocks fishing for the Blue Perch, or Conners. These are small sea-fishes which live together in great numbers near the



The Conner.

shore, and the moment a baited hook is thrown into the water among them, they eagerly bite it. The fishermen also often catch them in nets. Many people like to eat the Conners, and large numbers are sold in the markets for food.

In the warm parts of the ocean there is found a kind of fish which has a sharp spine on the



The Surgeon.

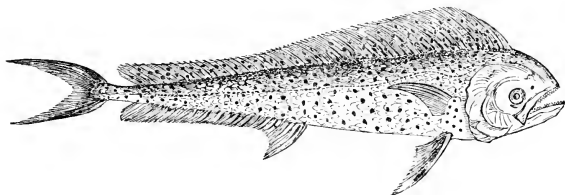
side of the tail just where you see the dark mark in the picture. This spine is as sharp as

a lancet, and the fish is called the Lancet-Fish; it is also called the Surgeon. This curious fish feeds upon sea-weeds instead of little animals.

In India there are very curious fishes, which are called Archers, or Shooting-Fishes, because they are so formed that they can spirt drops of water and hit and bring down flies and other insects which they see upon the plants growing near the margin of the streams. When one of these fishes sees a fly on a plant which overhangs the stream, he carefully moves towards it, gets as near to it as he can, places his mouth near the surface of the water, takes good aim, and then from his long tube-like snout darts a drop of water so straight that it hits the fly,—at a distance of four or five feet,—and brings it down upon the surface of the water, and then he quickly snaps it up and eats it.

One of the fishes which has most splendid and dazzling colors is the Dolphin. It lives in the Atlantic Ocean and in the Mediterranean Sea, and feeds upon fishes; it swims swiftly through the water, and chases the flying-fishes, and these

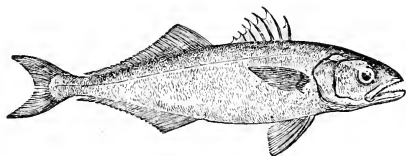
dart out of the water to get away from it; but when they come down again, the Dolphin catches



The Dolphin.

and devours them. It has the most splendid and varied hues and tints of blue, silver, purple, and gold.

The Blue-Fish has very sharp teeth, and when the fishermen catch it they are very careful not



The Blue-Fish.

to touch its mouth till they first kill the fish, lest they should get their hands and fingers badly bitten. It is eaten for food, and is very highly

prized. When you go to Nahant in summer you will see fishermen in boats not far from the shore catching the Blue-Fish, with a hook and line.

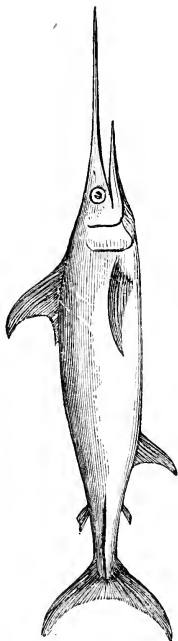
Here is a picture of the Pilot-Fish, which is often seen swimming just before a ship, or just in front of sharks which are following a ship.



The Pilot-Fish.

Many years ago some people thought that this fish guided the sailor across the waters, when he could not tell which way to steer his ship, and so they named it the Pilot-Fish. The sailors think that it guides the shark to the place where it will find food ; and when food has been thrown overboard, the Pilot-Fish has been seen to come up and smell of it, and then swim back and dart about the nose of the shark as if to tell him of the food ; and then the shark has been seen to move slowly forward, the Pilot-Fish swimming just in front of him until he led him to the bait. The great fierce shark is never known to attack

it, and will even allow it to swim through its open mouth without hurting it! The Pilot-Fish is small, and very nimble and swift in its movements. It is silvery-gray, with five dark blue bands around its body.



The Sword-Fish.

The Sword-Fish is very large, being ten or fifteen feet in length. It gets its name from its

hard bony upper jaw, which is very long, sharp, and sword-like. It is a very powerful fish, and it swims swiftly, and with its terrible sword it attacks the largest fishes and even great whales. It lives in the Atlantic Ocean and in the Mediterranean Sea. It is sometimes caught with the harpoon, and the chase is very exciting, for the Sword-Fish is so strong that it sometimes pulls the boat about in the water for several hours before the fish can be killed. Its flesh is white, and is sold in the markets, for it is highly prized for food. The Sword-Fish has been known to strike a ship, and drive its sharp weapon through the planks!



The Mackerel.

Mackerel are very beautiful fishes, which live together in the sea, in large numbers called schools. The kind whose picture you see here grows to be about a foot and a half in length; it is of a blue color on its back, and of a light silvery color on

its sides and under parts; and it is beautifully marked with deep blue wavy stripes, or bands, as you see them in the picture. The Mackerel is very highly prized for food, and the fishermen catch very large numbers of them, and sell them in the markets. The fishermen catch them in nets, and also with a hook and line. The Mackerel is a very hungry fish, and feeds mostly upon the young of other fishes; but it will generally bite at almost any kind of bait, and sometimes it will even bite a piece of red cloth as readily as if it were a fish. Mackerel live in deep water in the winter, but in the spring and summer they come nearer the shore. Many hundred vessels and many thousand men are employed all summer in catching these fishes, some of which they sell to be eaten while fresh, and others they salt and pack in barrels, and sell them in all parts of our country, and to people who live far away in other countries.

The Tunny, or Horse Mackerel, is a sea-fish which is much like the Mackerel, only it is very large, sometimes growing to be twelve feet long, and weighing a thousand pounds. This large

fish is often seen on our coast; one or two are caught at Nahant almost every year. Tunnies are very abundant in the Mediterranean Sea, and they are there caught in great numbers by means of nets and harpoons. Sometimes hundreds, and even thousands, are thus caught in a single day. In Europe the flesh of the Tunny is used for food, and is very highly prized. In the countries near the Mediterranean Sea and the Black Sea the people are fond of it while fresh, and they also preserve it with oil and salt for future use.

The Striped Bonito, or Skip-Jack, is much like the Mackerel, but is of a dark lead color on the upper parts of its body, and silvery white on the lower parts, and it has six or seven dark stripes on its sides. It lives in the Atlantic Ocean, and is very fond of catching and eating flying-fishes.

The Mulletts have a plump, rounded body, and a large flat head, and they are covered with large scales. They live together in the sea in large shoals, and they are often seen near the mouths of rivers, sometimes in such great numbers that they make the water look of a dark blue color.

They are caught for food, for their flesh is very tender and delicate. The fishermen catch them in nets; but the Mulletts are very active and can take high leaps, and they sometimes escape from

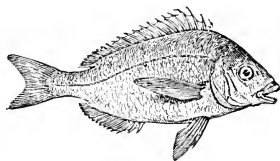


The Mullet.

the fishermen by leaping over the edge of the net. They feed upon small crabs and other crustaceans, and they swallow these animals whole, for their teeth are very slender, and are not strong enough to crush the hard shells.

The Red Mulletts are very common in the Mediterranean sea. The people who used to live in Rome, an old city in Italy, were very fond of these fishes, and paid very high prices for them, and kept them in fish-ponds and fed them with great care. On feast-days these fishes were placed in streams of water that were so arranged as to run through the banqueting-rooms, so that the guests might see and admire their beautiful colors and hues as they glided along through the water. It is said

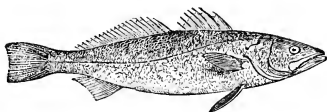
that the streams were even so arranged that they ran under the table and even under the very couches of the guests ; and that the fishes were often caught under the table, and at once cooked and served as food ; and that no mullet was thought to be fresh enough for a guest to eat, unless the guest himself had been allowed to take it or to see it taken from the water immediately before it was cooked. The Mulletts were also sometimes placed in glass vases on the table, that the guests might admire their beautiful and brilliant tints.



The Scupaug.

The Scupaug, or Big Porgee, is a beautiful sea-fish which is caught in great numbers along the coast of the United States. It is caught with a hook and line, and the catching of Scup, as it is often called, is a sport which visitors to the seaside in summer enjoy very much. It has stout teeth and spiny fins.

Here is a picture of the Weak-Fish. It is so called because it does not pull strongly upon the line when it is caught, as do the cod, trout, pickarel, perch, and many other fishes. The Weak-Fish lives in the sea, and is eaten for food. At New Orleans



The Weak-Fish.

the people call it Trout. The Indians that once lived on one part of the coast of New England used to call it by the long and hard name of Squeteaugue. This fish is about a foot long, and of a dark color. It sometimes grows to be two feet in length.

There are fishes that are somewhat like the Weak-Fish,—but very much larger,—that are so curious that I know you will like to read about them. They live in the sea, and some of the largest ones weigh a hundred pounds; they are sometimes called the Pogonias, and sometimes they are called the Drums, and sometimes the Grunters.

Many years ago there was a ship at the mouth of the Cambodia River, and the sailors and all on board were greatly astonished by wonderful sounds which they heard all around and beneath the vessel. These sounds seemed to be like those of an organ, and the ringing of bells, and the croakings of a big frog, all mingled together, and at first no one knew what was making the strange sounds. After a while those on board of the ship found out that the sounds were made by the Pogonias, or Drums. Fishes of this kind live on the Southern coast of the United States, and they sometimes make such drumming noises under the vessels that the sailors can hardly sleep.



The Stickleback.

Here is a picture of a little fish which builds a nest for its eggs and young. This fish has sharp spines along its body, and from these it gets the name of Stickleback. There are several kinds; some kinds live in the sea, and others live in the fresh waters. They have bright colors, and they

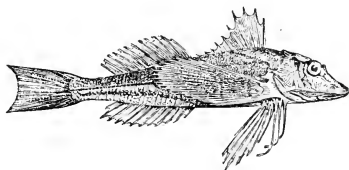
are very hungry, greedy little creatures. The Sticklebacks make very nice little nests; they often choose a spot for the nest near the growing plants, —for they make their nests of the sea-weeds and other delicate water-plants; but sometimes they carry the materials of which the nest is built a good distance, and they carry these things in their mouth. The Stickleback is a bold and fierce little fellow, and will not allow any other fish to come near its nest. If a fish ten times as large as he is swims near, he will dash at it, and by means of his sharp spines he will drive it away; and even if a stick be placed near his nest, he will dart fiercely towards it.

A little stickleback once built its nest in the loose end of a rope which hung down into the water; the end of the rope had become untwisted, and the little fish had brought sea-weeds, and had matted and woven a neat little nest in the tufted end of the rope.

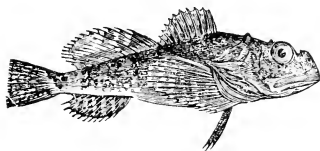
But the Stickleback is not the only fish that builds a nest. In the ponds and rivers in the warm parts of America live little fishes that are very curious in their habits. They build nests of

leaves, straws, and grass. These nests are often found in the little muddy streams that flow through the sugar marshes, for they are built in the muddy bank just above the top of the water. These fishes can live for a few days out of water, and they are often seen on their way from one pond to another.

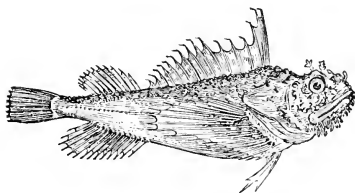
On the next page are pictures of three very queer-looking fishes which live in the sea, and which the fishermen very often catch when they are fishing for other and better fishes; these are not very good to eat, and so the fisherman would rather not catch them. One of these fishes is called the Sea Robin, not, I suppose, because it looks much like our beautiful robin, whose picture I have shown you in the little book about Birds, but because it has long fins which look a little like wings, and so somebody, a great while ago, thought it would do to call it Sea-Robin. It grows to be about as long as your arm. The Sculpin is an ugly looking fish, about a foot long. The boys often catch it when fishing from the wharves and bridges; and when it is first taken from the water it makes a queer croaking noise. The Sea-Raven is about as large as the Sea-Robin, and its colors are yellow, red, and brown.



The Sea-Robin.

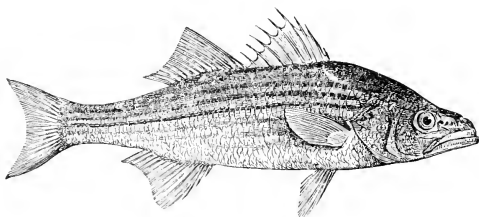


The Sculpin.



The Sea-Raven.

The Striped Bass, or Rockfish, is a beautiful fish of a brown color above and silvery below, with long dark stripes on each side of the body, just as you see them in the picture. This fish is very good for food, and large numbers are caught by the fishermen and sold in the market.



The Striped Bass.

The Striped Bass lives in the sea, but it keeps near the shore. It is often caught in long and large nets called seines. It is also caught with a hook and line, but the hook and line have to be very strong, for some of the fishes of this kind are as heavy as you are, and when a fisherman hooks one of these large ones he has to pull very hard to draw the big fish ashore or into the boat.

The Yellow Perch is another very beautiful fish. Its color is yellow, with black bands, as you see them in the picture; and the fins are red. The Yellow Perch lives in lakes, ponds, and rivers,



The Yellow Perch.

and is caught with a hook and line. It pulls upon the line very smartly, and boys think it is good sport to catch Perch. It bites the best in the spring of the year. If you handle it, you must be careful and not get pricked with its very sharp spines.

The Darter is much smaller than a perch, being not much longer than your finger. It lives in



The Darter.

brooks, but you will not often see it, for it is very small and is not found in all brooks.

This little fish is shaped so much like the seed of a pumpkin, that it is often called the Pumpkin-



The Bream.

seed. It is also called the Pond-Fish, and the Bream, and sometimes the Sun-fish or "Sunny." It is only five or six inches long, and it is of a greenish-brown color, with many red spots. It lives in lakes, ponds, and rivers in this country, but is not found in other countries. When the little Breams are ready to lay their eggs, they make hollows in the sand, about the shape of a wash-basin, and in these places they lay their eggs, and then they carefully guard them till they hatch. You can easily find their nests in the sand where the water is not deep, and near the shore. If you drop anything upon the nest of a Bream, the fish will quickly pick it up in her mouth, and carry it away and drop it outside of the nest.

In the Atlantic Ocean and in the Mediterranean

Sea there are small fishes which have their eyes placed on the top of the head, so that they appear as if they were all of the time looking upward at the sky ; and so they have been called the Star-Gazers. Here is a picture of one of them, and

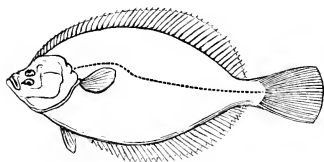


The Star-Gazer.

do you not think it is rightly named ? This kind lives in the Atlantic Ocean, and it is said that it has in its mouth a long thread-like organ which it can run out beyond its mouth, and that when little fishes come to get this, thinking it is something for them to eat, the Star-Gazer snaps them up and eats them.

The Flounder is a very queer-looking fish ; it is as flat as your hand, and its eyes, instead of being placed like those of other fishes, one on each side of the head, are both on the same side of the head, which gives to this fish a curious and very strange appearance. Flounders live on the bottom of the

sea, lying perfectly flat on the sand and mud, and eating such food as they find there. Boys and men catch them with a hook and line by fishing from the wharves and bridges. On the coast of Nor-



The Flounder, or Flat-Fish.

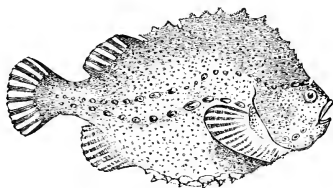
way, where the water is very clear, the Flat-Fishes can be seen on the sand at the bottom, and they are often taken there by dropping down upon them a short spear to which a line is attached.

On the coast of Europe there are fishes which look like Flounders, but they are called Soles and Turbots. Many thousands are caught every year and sold in the markets, for they are very good for food. They are taken in nets and also with the hook and line. The lines for catching Turbots are sometimes three miles each in length, and to each long line from six hundred to eight hundred hooks are fixed, and each hook is baited with

a small fish. Large pieces of lead or small anchors are attached to these long lines to keep them from being carried away by the tide, and they are kept in the water several hours before they are drawn in.

The Halibut which you have seen in the market, and which looks so white and clean, is a very large fish which looks like a flounder. The Halibut is sometimes as heavy as four men ; it is caught with the hook and line in the cold parts of the sea.

The Lump-Fish, or Lump-Sucker, lives in the sea, and when full-grown is about as long as your arm. Its under fins are joined together in such a man-



The Lump-Fish.

ner that they are of a cup-shaped form, and by means of this cup the Lump-Fish can fix itself firmly to the surface of a rock under the water. A

gentleman once put one of these fishes into a pailful of water, and it fixed itself so firmly to the bottom of the pail that he lifted the whole pailful by taking hold of the fish by the tail.

But the Remora is more curious and more wonderful than the lump-fish. It is a long slender fish with small fins and tail, and the top of its head is flat, and so made that the Remora can attach



The Remora.

itself by means of its flat head to the body of another animal, and thus it can be carried about in the ocean; it is often found attached to other fishes and to whales; and sometimes four or five



The Top of the Remora's Head.

of these queer fishes are fixed to one large fish like the Shark. Here is a picture which shows

you the top of the head, and the oval disk or shield called the sucking-plate, by means of which the Remora attaches itself to other animals and sometimes to the bottom of a ship. This part of the head is made up of bands, which run across from one side of the head to the other, and these bands have little teeth, or spines, on their edges ; between these bands are movable plates, and when the Remora wishes to fix itself to another fish, it hooks on by means of the toothed bands, and, drawing back the movable plates, it makes spaces between the bands, and thus is able to hold on so firmly that it is not easy to take it away. The people who lived many years ago believed that this little fish had the power to stop a large ship when under full sail, by attaching itself to the bottom.

Most of the kinds of Remora live in the warm parts of the sea, but some kinds live in the cool seas, and are found as far north as Labrador.

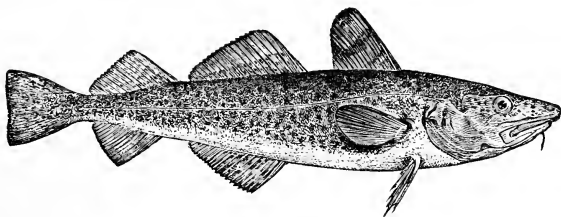
The Indians of Jamaica and Cuba used to employ the Remora in catching other fishes. They kept these sucking-fishes and fed them, and took good care of them, and, when they went out fishing with one of them, it was fastened

by a long, slender, but very strong line to the canoe, and when it saw a large fish in the water, it would dart swiftly away and soon fasten itself to it. The man in the canoe then loosened the line, to which a buoy was attached, and the buoy floating on the water told the course the fish had taken, and then the man followed in his canoe; and when the large fish seemed to be tired out, the man took up the buoy, and drew the line to the shore, the Remora all the time keeping a firm hold of the large fish. It is said that the Remoras are used by the people of Mozambique in catching turtles. A ring is fixed around the Remora's tail, and a long line is attached to the ring; the fish darts through the water and fastens to a turtle, and the two are then drawn ashore.

Here is a picture of the Cod, one of the most useful of all the fishes. It sometimes grows to be very large and heavy, weighing one hundred pounds or more; but most of the fishes of this kind which you will ever see are much smaller than this, and weigh from two to eight or ten pounds. The Cod lives in the sea, and is caught

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with the hook and line. A large number of vessels and many men are employed every day in summer in catching Cod for the market, for this fish



The Cod.

is very highly prized for food. Vast numbers of them are sold to be eaten while they are fresh, and vast numbers more are salted and dried, and at last packed in bundles and sent to nearly all parts of the world.

The Spotted Burbot is a fish which lives in the lakes and rivers in the northern part of

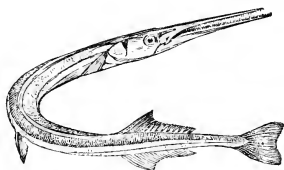


The Burbot.

our country. It is about two feet long, and on its chin are little barbels, as you see them in the picture.

The Bill-Fish has very long narrow jaws, which look a little like the long, sharp bill of a heron, or a snipe. The Bill-Fish, or Gar-Fish, as it is

often called, lives in the sea, and is one or two feet long ; it is green with silvery-colored under



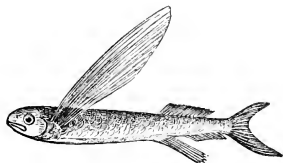
The Bill-Fish.

parts and a green band on its sides. If you could see the bones of this fish, you would find them to be green also. Other fishes have white bones.

In the warm waters of the tropical regions live the curious little fishes called the Flying-Fishes. They have this name because their fore-fins are very long and broad, and because their large fins enable these fishes to support themselves for a little while in the air, so that they seem to fly. A great many years ago there were people who believed that this kind of fish flew out of the water at night, and slept upon the land, and so they named it *Exocetus*, which means a bed outside.

There are many kinds of Flying-Fishes, and all of them are small ; the largest kinds are only

about twelve inches long, and the smallest kinds are only three inches long. Many kinds of sea-fishes like to feed upon the Flying-Fishes, and they pursue them, and the Flying-Fishes, in their alarm



The Flying-Fish.

and terror, leap out of the water into the air ; but the poor little fishes are not out of danger even there, for many kinds of sea-birds also like to eat them, and so when they leap out of the water to get away from hungry fishes, sea-gulls as hungry as the fishes may snatch them up and devour them.

The Flying-Fishes cannot support themselves in the air much longer than half a minute, but their flight is very rapid, and by those persons who have seen these fishes flying it is said to be almost as swift as the flight of a swallow. They do not fly very high in the air ; usually only three or four feet above the surface of the sea,

but sometimes their flight is much higher than this. Flying-Fishes have been known to fall upon the deck of a vessel, ten or fifteen feet above the surface of the water; and they have been caught in the chains and ropes of a ship twenty feet above the water. Their flight is almost always straight forward, but sometimes they turn a little to the right or left just before they return to the water. Flying-Fishes have very beautiful and brilliant colors. They live together in large groups, or schools, and so, when chased by dolphins, bonitos, and other fishes, many leap out of the water at the same moment, and on a bright clear day they present a beautiful and splendid sight.

In the limestone rocks, near Green River, in the State of Kentucky, there is a very large cave, one of the largest in the world. From its great size it is called the Mammoth Cave. It has many very large and very high rooms, and these are connected together by long and narrow galleries, so that if you should go into all the rooms you would have to travel thirty or forty miles. The first great room into which people go, when they visit the cave, is two hundred feet long, one hundred and

fifty feet wide, and fifty feet high, — a much larger room than you ever saw. In the rooms of this cave there are very wonderful and most beautiful formations of alabaster, or white gypsum, which look like leaves and flowers; there are also formations of limestone which look like icicles, only much larger, and which are called stalactites. There is also a river in this great cave, and on this river boats are kept in which you may ride just as you ride in a boat on the pond or river near your home. It is very dark in this cave, and those who go about in it must carry candles, or torches, so that they may see where to step, and so that they may see the wonderful and beautiful things in the great rooms of the cave. No animals live in this great dark cave, except a few kinds of insects, rats, and bats, and one or two kinds of fishes in the river. It is about these



The Blind-Fish of the Mammoth Cave.

curious fishes that I wish to tell you. They have no real eyes, and so they are called Blind-Fishes. Here is a picture of one of them. As these fishes

live all of the time in the dark waters of the cave, they have no need of such eyes as other fishes have, and therefore God has made them so that they are just fitted for the place in which they live.



The Horned-Pout.

The Horned-Pout has a smooth skin, and very stout, sharp spines; and if you get your hand pricked with one of these spines, the wound gives you great pain. Horned-Pouts live in lakes and ponds, and in slow-moving streams. Large numbers of them are caught with the hook and line, and they are good for food. There are many kinds of horned-pouts, and they are often called Cat-Fishes. Some kinds watch over their young, and defend them from the attacks of other fishes.

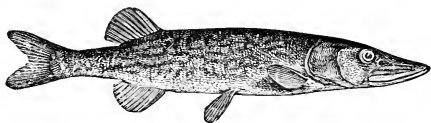


The Shiner.

The Shiners, Dace, and Suckers are fishes which

are very numerous in ponds and rivers. The Shiner whose picture you see here is of a beautiful golden color. Some kinds have very handsome red fins.

The beautiful Gold-Fishes which are kept for pets, and which you have often seen in vases, are much like the Shiner. The young Gold-Fishes are of a dark color, but they become of a golden-red color when they get older. The Gold-Fish was first brought from China nearly two hundred years ago, but now it is very common in garden ponds, and many of these pretty fishes live in the Hudson River.



The Pickerel.

The Pickerel lives in lakes, ponds, and rivers, and is one or two feet long, and has a long and broad and flat snout, and very sharp teeth. It is a very hungry animal, and catches and swallows all kinds of little fishes; and it catches and eats

its own little ones as readily as it catches and eats shiners, dace, suckers, and other fishes.

Catching Pickerel with a hook, line, and fishing-rod is very exciting sport for boys and men. The hook is baited with a piece of a fish, and sometimes with a whole fish of a small size, and then the hook and bait are moved about on the surface of the water. The hungry Pickerel "jumps" at the bait,—as the fishermen say,—catches it in his mouth, and quickly rushes down deeper into the water, and "stands still," holding the bait in his mouth. Soon he begins to swallow it, and if the fisherman draw the line straight, the Pickerel begins to move away quite rapidly; then the fisherman gives him a hard pull,—which fixes the hook into the Pickerel's jaws,—and then skilfully draws him ashore or into the boat. If the Pickerel be very large, the fisherman manages him, keeping the line straight, and lets him "run" till he is tired out and perhaps nearly dead.

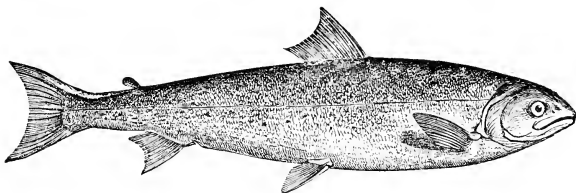
Men and boys often catch Pickerel in the winter when the lakes, ponds, and rivers are covered with thick ice. They cut many holes through the ice, and in each hole they put a hook and line, the

hook being baited with a live little shiner, or some other small fish. On that part of the line which is out of the water they fix a piece of red flannel or some other kind of red cloth, for a signal, which can be seen at a considerable distance, and then they hang the line upon a bush, or upon a stick which is made for the purpose of being used in fishing, so that the red signal shall be in plain sight. When a Pickerel bites the hook or bait, he pulls the signal down, and one of the fishermen who are watching, seeing it fall, or seeing that it is gone, runs from the warm fire, which they keep burning upon the shore of the pond or river, and pulls the Pickerel out of the water upon the ice. He then baits the hook again, returns to the warm fire and his companions, and they are all once more on the lookout to see the signals fall.

I think you will like to read about the Salmon, a fish of elegant form and of very beautiful color, and the flesh of which is most delicious food. Its head is dark steel-blue above, and white below, its back is greenish blue, its belly is white, and its sides are shining silvery gray. Its flesh is of

a beautiful reddish color, and it is very sweet and delicate to the taste.

Salmon live in the cold parts of the sea, but they come once every year into the rivers of cool countries to lay their eggs in the fresh waters. They begin their journey in the spring, or in the early part of summer, and move towards the mouths of the rivers, and there, it is said, they remain for a few days, and sometimes for a week



The Salmon.

or two in the brackish waters, as if to prepare themselves for breathing the different kind of water which they are soon to enter; then they move on up the rivers, toward the head-waters, sometimes swimming rapidly, at other times resting in some still part of the river; then, moving on again, they are seen dashing through the rapids, and even leaping over the rocks and water-

falls which are not more than five or six feet in height. It is said that they move forward in the daytime when the weather is cloudy, or when the water is muddy enough to hide their movements; and that when the water is clear, they move at night, or very early in the morning.

But I must tell you more about the leaping of the Salmon, and also of the curious fact of their returning from the deep sea to their native rivers to lay their eggs. A salmon may be chased by a larger fish, or by a seal, or by some other enemy, and driven into a strange river, but most of the Salmon find their way back every year to the river in which they were born. Salmon have been taken from a river and marked, and then put back into the water again, and the next year, or in some succeeding year, they have again been caught from the same river. In the mean time they have made one or more journeys to the sea and back, according to the number of years that have passed since they were first taken from the water.

A gentleman once took twelve Salmon from a river, and marked them by attaching to each one

a copper ring; he then put them back into the water. From the same river five of these fishes were taken the next year, three were taken the second year, and three the third year.

Man has often made use of this wonderful instinct of the salmon which leads it to return to the place where it was born, and many rivers in which salmon had never before lived have been abundantly stocked with this beautiful and valuable fish. I have read a story about the stocking of some rivers in Scotland with salmon, and I will tell the story to you. Into a large lake more than twenty miles long there flow four rivers, and out of the lake runs one river to the sea. Salmon used always to come from the sea, and run up the river, and enter the lake; but none were ever seen before the year 1835 in either of the four rivers which flow into the lake. About thirty years ago, some large salmon were caught just before the time for them to lay their eggs, and several pairs were put into each of these four rivers. Ever since that time salmon come every year to each and all of these rivers to lay their eggs, crossing the whole lake to find the waters where they were born.

Wonderful stories have been told of the great height to which the Salmon will leap in order to get above a dam or over rocks and waterfalls; and it has been said that the Salmon first puts its tail in its mouth, and then, when bent like a bow, it gives a spring, lets go its tail, and bounds out of the water to the height of twenty feet! But this is not true.

If the water is shallow the Salmon can leap only a little way above the surface; but if the water is deep they are able to leap from five to ten feet above the surface, for they start from the bottom, and rise very quickly in the water, and by this rapid motion they get such headway that they are carried out of the water and up into the air.

Sometimes many hundred salmon collect together in the pool at the foot of a fall, for when the fall is very high they do not try to leap it, but wait until a tide raises the water below the fall, and thus makes the leap less for them. When the river rises the Salmon begin to leap, and it is then very interesting to watch them. The younger and smaller salmon do not seem to know so well how to take the leap, and they often jump up straight

in the air, and so of course fall back into the water below the fall. The older and larger salmon leap in a curve towards the top of the fall, and if they succeed in reaching the edge, they dart swiftly up the river. It is said that after taking these leaps the Salmon rest for several hours in the first still part of the river that they reach. The Salmon are often bruised and hurt in their long journeys up the rivers ; for when the current is swift, and the water muddy, so that they cannot see well, they are driven against sharp rocks, and the nose and head are often rubbed white by contact with rough objects in the water.

In the sea, salmon feed upon other fishes, and upon shrimps and other marine animals. When they first get into the fresh waters of rivers they eat insects, worms, and small fishes ; after a few weeks they appear to take very little food, and they seem to be able to live for several weeks without eating at all, for they are sometimes caught from the river and placed in a tank of running water, where they are kept for three or four weeks, before being sent to the market, and all this time they are not fed at all, and still they remain plump and fat.

Although the Salmon spend most of the time in the salt water, it is possible for them to live all the time in fresh water. A Salmon was once kept for twelve years in a well of fresh water ; it became very tame, and would come and feed from the hand of its owner.

The Salmon do not get ready to lay their eggs until they have been in the fresh water for two or three months. As I have told you, they go far up the river, and sometimes they even enter the little brooks, to make their nest. They choose for the spot a shallow part of the stream, where there is a gentle current of running water, and at the same time a place that is not likely to become dry, and where the bottom is sandy or covered with gravel. Salmon have been watched while they were making their nest and laying their eggs ; and it is said that, after having selected the spot in which to make it, they first drive away every other fish that comes near them, and then they begin to dig a hollow in the sand and gravel in which to place the eggs. The female Salmon begins the work by swimming down the stream a little way, and then, darting quickly back, she thrusts

her head into the sand, and works with her belly and fins, pushing out the large pebbles with her nose. While she is at work the male fish is on the watch, and swims around and around her as if to protect and guard her; when she is tired, she rests and her mate takes her place, and goes on with the digging. When the hole is made deep enough, the eggs are laid, and then are soon covered with the sand and gravel which has been dug out. Several nests are often made in this way, one after another and close to each other; they are not made across the stream, but in the direction of the running water. The number of eggs which a Salmon lays in one season is very great, sometimes it is as many as twenty thousand! The river trout like to eat the eggs of the Salmon, and they try to come near enough to get at them, but the Salmon fiercely drive them away. The water-ouzel — the curious little bird whose picture you have seen in your book about the Birds — is also believed by some persons to eat salmon-eggs, and it is said to come to the water and dive down into it, and run along on the bottom of the stream to the Salmon's nest to feed upon the eggs before they have been cov-

ered up by the Salmon with sand and gravel. But it is not certain that the ouzel does eat the Salmon's eggs, although it is certain that it gets its food beneath the surface of the water. After the eggs are covered with sand and gravel, neither trout nor bird can get at them. After they have covered the eggs, the Salmon do not any longer stay near to guard their nests. The eggs are laid in the fall, and they do not hatch until the next spring. The young salmon when first hatched are called Parr; just before descending the rivers to enter the sea they become brighter in color, and are then called Smolts, and are from four to six inches long; after they have been to the sea and have returned to the rivers for the first time, they are called Grilse; and when they are old enough to lay eggs, they are called Salmon.

Many men are employed every year in catching Salmon; and large sums of money are paid for the right to fish in certain rivers. Salmon are caught in nets and traps, and with the rod and line. Catching them with the rod and line is considered rare sport.

Salmon were once very abundant in all the large

rivers of New England, but the high dams which have been built have prevented them for many years from getting up these rivers to their nesting-places, so that now, with the exception of a few of the rivers in Maine, there are none to which the Salmon come. But within a few years "fish-ways" have been made, by means of which the Salmon are able to pass up the rivers above the dams, and soon, we hope, all of the New England rivers will be frequented by this useful fish.



The Brook-Trout.

The pretty Brook-Trout, or Speckled Trout, belongs to the same family as the Salmon, and it is of the same shape as that fish, but it is much smaller, and its back is marked with black wavy lines, and its sides are ornamented in the most beautiful manner with red and yellow spots. It likes to live in clear, cool brooks and streams that flow down from the mountains, and which boil and foam as they pour over the large rocks and small stones along their course.

The Brook-Trout eats grasshoppers, flies, beetles, bugs, and almost all kinds of insects which fall upon the surface of the water, and it chases the little fishes and feeds upon them when it can catch them ; it also likes earthworms to eat, and the men and boys who fish for trout often use the earth-worm to bait the hook with.

The Trout lays its eggs in the autumn, and it first makes a nest for them in the sand and gravel at the bottom of the stream, by rooting with the nose. The eggs hatch in the course of two or three months, and the little trout at first are not much larger than the little wrigglers which you have seen in pools of standing water. In three or four weeks they grow to be an inch or an inch and a half long. They keep in the running water, but in the more shallow places, and they feed upon little water-insects and the young of flies.

The Trout are very shy and very knowing fishes, and so none but skilful fishermen often have good luck in catching them. The skilful fisherman has a long light rod, a small and delicate and strong line, a small sharp hook which he baits with an earth-worm ; and then, standing back from the

water as far as he can and reach it, and taking care that his shadow does not fall upon the stream and thus frighten the trout, he throws his hook and line far into the swift eddies, and as soon as he feels a bite, he jerks his rod so as to hook the fish, and then skilfully lifts the beautiful speckled game from the water, and puts it into his basket; and then baits his hook and throws again for another bite.

Sometimes the Trout will not bite a hook baited with an earth-worm, and then the expert fisherman fishes with a "fly"; this is a hook which has no real bait, but upon it there is fixed something which is made of a feather, and which looks like a real fly, or a miller. or a grasshopper, or some other insect. This the fisherman draws lightly and quickly over the surface of the water, and as soon as a trout leaps up out of the water to catch it, he jerks his rod, hooks him, and secures him the same as before.

Men often take great pains to catch Trout; they go long distances, and willingly make their way over rocks and through woods and bushes, and they even wade the streams in order to fill their baskets with these beautiful fishes.

The Trout is a beautiful fish for a pet, and it is often kept in aquariums, and in springs, and wells, and it becomes so tame that it is not at all afraid when any one comes near it; and if a grasshopper or any other insect, or a bit of food, be dropped upon the surface of the water, the Trout will quickly snap it up and eat it; it sometimes gets so tame that it will come and take a grasshopper or an earth-worm from the hand of its owner.

In the lakes of our country there is a kind of trout called the Great Trout of the Lakes. It is from two to four feet long, and grows to weigh more than a hundred pounds. It is sometimes called the Longe. It is very abundant in Lake Superior, and in the other great lakes in the northern parts of our country. Its color is dark gray, with light spots, and the under parts are light-colored. In Lake Superior the fishermen stretch a long line with a great many short lines tied to it, and each short line has a baited hook on it; every morning the fishermen pull in the long line, and all the short lines which are tied to it, and from the short lines they get a great number of large and beautiful lake trout.

The Herring is about a foot long, of a blue color above and silvery-white below. Its body is covered with scales, and the under part of the body comes to quite a sharp edge. The true home of the Herring is not known, but it is believed that they live far away to the North, in the cold parts of the ocean; but every spring and summer they come in immense numbers to the warmer regions, and run up the rivers to lay their eggs. Some



The Herring.

people believe that they live in the deep sea, not far from the places where they are seen in the spring and summer. The schools of Herring are sometimes many miles in length, and as they come near the shore they present a very beautiful appearance, the silvery sides of the Herring flashing in the sunshine. They are often pursued by large fishes and by seals; gulls, terns, and other sea-birds hover in the air above them, and from time to time seize some of them.

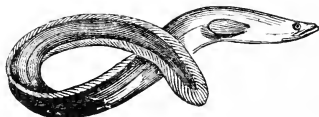
The Herring are good for food, and many millions of them are caught every year. The people of Holland alone have had at one time three thousand boats and more than fifty thousand men employed in catching herring. They are caught in fish-pens and in nets, and are carefully prepared and preserved for food.

In some of the rivers of our own country herring have been so abundant that they were caught and spread upon the land to enrich it.

The Sardines which you have often seen, and which are brought to us tightly sealed in tin boxes, are little fishes much like the herring, and which live far away in the Mediterranean Sea.

The Shad is also very much like the herring, only it is larger. Its home is in the sea, but it comes into the rivers to lay its eggs ; and it is then caught in large numbers, for it is very nice food. Men catch the Shad in long broad nets, in which the meshes are very large. They stretch these big nets across the river, and the Shad, as they swim up, slip their heads through the meshes, but cannot get their bodies through, nor can they draw their heads out again, because their gill-covers

catch on the threads ; so the Shad drown and hang there until the fishermen come and lift up the net from the water and take them away. You may wonder why they drown, since they are made to live in the water. If fishes cannot open and shut their gill-covers regularly, so as to keep a stream of water flowing into the mouth and out of the gill-openings, they will drown, just as you would drown if you were under the water and could not get out.



The Eel.

Almost every boy whose home is in the country, and who has ever been a-fishing, has seen the Eel, a curious and very long fish that looks a little like a snake, but which is a true fish, and is really in no way like a snake, except that it is long like that animal.

Eels live in rivers, ponds, and lakes, and also in the sea near the shore. They grow to be two

or three feet long, and sometimes even five or six feet long. They seem to be without scales, and covered only with a smooth, thick skin ; but most kinds have scales, only these are deeply embedded in the thick soft skin.

I have told you that the salmon, the herring, and the shad live most of the time in the salt water, and go to the fresh waters of rivers only to lay their eggs ; the Common Eels live most of the time in the fresh water, but those that live in rivers near the sea go to the salt or brackish waters to lay their eggs. They go to the sea in autumn, and return to the fresh water in the spring. They are very good food, and in the autumn, when they go down the rivers, large numbers are caught in nets, traps, and eel-pots, and are sold in the markets. In the winter the fishermen go upon the ice of the bays and rivers which are close to the sea, and with long spears they spear the eels through holes cut in the ice. Men and boys catch eels in the ponds by means of a hook and line, baiting the hook with earthworms.

Eels can live for some time out of the water, and they can be carried alive a long distance, if packed in damp grass.

They sometimes leave the water at night, and crawl along the grass in search of food, or of another body of water. The body of the Eel is covered with a slimy, sticky fluid, which helps it to make its way along when on the land, and which also enables it when in the water to ascend upright objects.

The eels which live in ponds and lakes remain there the whole year, and do not go to the salt-water.

The Sand-Eels live in the sea and burrow in the sand, and it is from this that they get their name. The fishermen take them in nets, or rake them up from the sand when the tide is out and the water low, and they use them for bait in catching larger fishes.

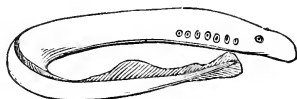
In the waters of the warm parts of South America live large Eels which have the strange power of giving electrical shocks; and the shocks which they are able to give are so powerful, as at last to benumb and even kill large animals like the horse and the mule. I have read that in one place in South America the direction of a road had to be changed, because at the ford —

the place where the road crossed the river — the Electrical Eels were so numerous that every year they killed many mules while they were crossing with their burdens from one side of the river to the other. After the Eels have given many shocks they become weak, and it is then quite easy to capture them; and the Indians sometimes obtain them by first capturing wild horses and mules, and then driving them into the muddy waters in which these large Eels live; the Eels come out of their hiding-places and give such violent shocks that they kill some of the horses and mules, and soon make themselves so weak that they can be caught without much trouble or danger.

In the Mediterranean Sea there is a kind of Eel called the Roman *Muræna*. Its color is brown, and it is beautifully marked with yellow spots. The Romans, people who lived very long ago, were very fond of these for food, and they kept them in ponds and fed them with food which these eels liked. Before cooking them they used to place them alive in crystal vases upon the table, that the guests might see them and admire their beautifully spotted skin.

THE SUCKERS.

THE Lamprey is an eel-like fish which has a tongue that moves forward and backward in the mouth in such a way that by this movement the Lamprey can fix itself to stones and other objects



The Lamprey.

in the water. It is often found attached to the body of another fish. Lampreys live in the sea, but go up rivers to lay their eggs; and it is said that they pile up stones, among which they then lay their eggs.

The Hag and Amphioxus are very small and weak fishes which look like worms. They live in the ocean, and are not very often seen. They are not pretty to look at, but you will like to learn about them when you are older.

The Amphioxus, or Lancelot, burrows in the sea-sands, and it is so quick in its movements

that if you were to dig it up from its hiding-place and leave it for a single moment, it would bury itself before you could grasp it.

Although the Hag, or Myxine, is small and feeble, it attacks very large and powerful fishes and destroys them. You will want to know how it can



The Hag, or Myxine.

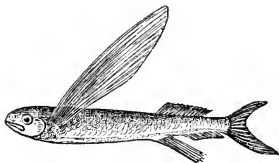


The Amphioxus.

do this, and I will tell you. It fixes its mouth tightly upon the skin of a large fish, and then by means of its curious sharp teeth it bores its way into the fish, even to its internal parts, and thus at last kills it.

Dear Children, I have told you of only a few of the Reptiles and Fishes; there are many thousand kinds in all, and to tell of them would take

many large books. But I hope that you are glad that you have learned a little about some of them, — that you know how they look, and where they live, and what they eat; that many of them are beautiful, and even splendid in color; and that many of them are of the greatest use to man. I hope you will try to learn more about these animals as you see them in the ponds and streams, and in the markets, and when you visit the sea-side; and if some kinds of them are not beautiful in form, and are not pleasing, like the birds, to look upon, you may at least remember that the Creator has made them all, and that He cares for them, and that He has made them for a good and wise purpose.



THE END.

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